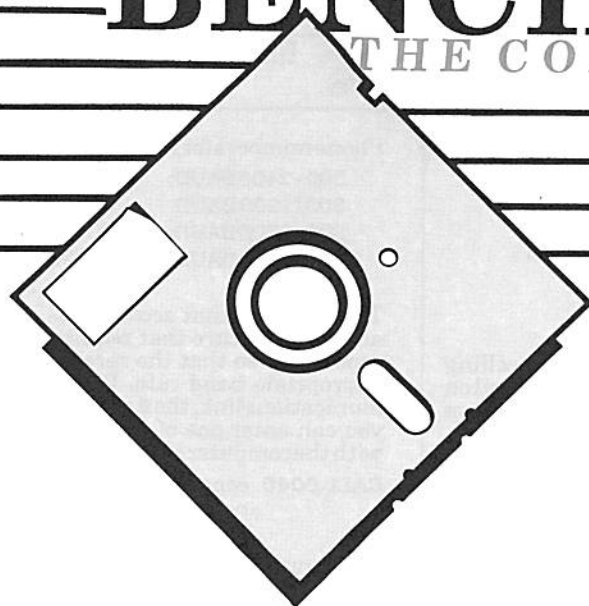


BENCHMARKS

THE COMPUTING CENTER



University of North Texas

VOLUME 10 NUMBER 8

OCTOBER 1989

The Text Processing Issue

Text Processing: Word Processors, Program Editors, and
Desktop Publishing Software (Page 1)

The COM-LETE Solution to Text Processing (Page 4)

Choosing a Desktop Publishing System (Page 16)

Is Desktop Publishing Right for You? (Page 16)

Using WordPerfect 5.0 With Style (Page 20)

WordPerfect User's Group Forming (Page 22)

WordPerfect 5.1 Upgrade Highlights (Page 23)





SERVICES AVAILABLE TO USERS OF THE UNT COMPUTING FACILITIES

The UNT Computing Center is located in the Information Sciences Building (ISB), Room 119. Phone Numbers:

Computing Center: (817) 565-2324
HelpDesk: (817) 565-4050
Micro Support: (817) 565-2316, 565-2319
Graphics Lab: (817) 565-3479
ISB I/O Area: (817) 565-3890
BA I/O Area: (817) 565-2350

All personnel listed below can be contacted either by calling the Computing Center or by sending them electronic mail on MUSIC/SP (ID-codes follow each name. All IDs are on BITNET node UNTMUSIC).

Benchmarks - Claudia Lynch (AS04)

Information & ID-Codes; Disk Space Problems - Marilyn Jett

Statistical/Research Support - George Morrow (AS01), Panu Sittiwong (AC09), Phanit Laosirirat (AC44)

Academic ADABAS/COM-LETE - Janis Burkham (AC55)

CRSP & COMPUSTAT Problems - Panu Sittiwong (AC09), Phanit Laosirirat (AC44)

Student Programming Problems - CSCI Dept., GAB Room 542A; BCIS Dept., BAR Room 152

Problems with JCL, Passwords, or Operating Systems; or Communication/Terminal Problems - Help Desk

Data Entry; Test Scoring & Analysis - Betty Grise

Administrative Applications - Coy Hoggard

Printout Retrieval - ISB or BA I/O Operators



DIALING-UP UNT COMPUTERS OVER THE TELEPHONE

Phone numbers for the Local Area Network (LAN) are:

300-2400 BAUD: (817) 565-3300
 300/1200 BAUD (817) 565-3499
 300-9600 BAUD: (817) 565-3461
 300-9600 BAUD: D/FW METRO 429-6006, 429-9314

Area code 214 must dial 817 before the METRO #.

The numbers that accommodate multiple baud rates have an autobaud feature that requires you to hit the <RETURN> key repeatedly so that the receiving modem can determine the appropriate baud rate. When you have established a communications link, the # prompt will appear on your screen and you can enter one of following CALL commands to connect with the computer of your choice.

CALL 8040 connects with the NAS/8083 (supports line editing or PCWS). Operating environments available are: MUSIC/SP, VM/CMS.

CALL 3270 connects with the NAS/8083 through a 3270 protocol converter (supports full-screen editing). Operating environments are: MUSIC/SP, VM/CMS, ADABAS/COM-LETE, PHOENIX

CALL DEC connects with the VAXcluster (VMS, Eunice)

CALL 780 connects with the Research VAX (Unix)

CALL 3000 connects with the Libraries' HP-3000 (Bibliographic database).

CALL 6800 connects with the NBI (Unix)

Communications Settings

LAN addresses	Data Bits	Parity	Stop Bits
DEC, 3000	8	N	1
8040, 3270, 780, 6800	7	E	1

HOURS FOR UNIVERSITY OF NORTH TEXAS COMPUTER ACCESS AREAS : FALL 1989*

Location	Days	Times
Computing Center RJE	Sunday Monday Tuesday-Saturday	Noon-Midnight 7 a.m.-Midnight 7 a.m., Tues.-Midnight, Sat. (Open 24 hours/day)
ISB 110 Terminal Area	Sunday Monday-Thursday Friday Saturday	1 p.m.-Midnight 7:30 a.m.-Midnight 7:30 a.m.-9 p.m. 9 a.m.-9 p.m.
College of Business	Sunday Monday-Thursday Friday, Saturday	Noon-11:45 p.m. 8:15 a.m.-11:45 p.m. 8:15 a.m.-7:45 p.m.
GAB 550C	Sunday Monday-Thursday Friday Saturday	2 p.m.-Midnight 8 a.m.-Midnight 8 a.m.-5 p.m. 2 p.m.-Midnight
Graphics Lab	Sunday Monday-Thursday Friday Saturday	Noon-10 p.m. 8 a.m.-11 p.m. 8 a.m.-5 p.m. Noon-6 p.m.

*Hours may vary. Check MUSIC/VAX News and/or posted schedules for exceptions.

This issue of *Benchmarks* was produced using Xerox Ventura Publisher on an AT clone and printed on an Apple LaserWriter II and an HP LaserJet Series II. Unless otherwise noted, articles or information may be reproduced for nonprofit purposes provided the publication and issue are fully acknowledged.

GENERAL INFORMATION

Text Processing: Word Processors, Program Editors, and Desktop Publishing Software

By Billy Barron, VAX System Manager (BITNET: Billy@UNTVAX), Philip Baczewski, *Benchmarks* Associate Editor (BITNET: AC12@UNTVMI), and Claudia Lynch, *Benchmarks* Editor (BITNET: AS04@UNTVMI)

Most computer systems that you use will have at least one thing in common: they all have some type of editor. Editor programs can be the most used application on a computer system. In fact, the majority of information on computer systems was probably initially input through some type of editor program. Typically, computers are used for editing two basic types of files. The first type is a document: a letter, article, thesis, etc. The other major type is a computer program. This article examines the differences between program editors, used for editing computer programs, word processors, used for document editing and printing, and desktop publishing software used for document composition (layout) and printing.

Word processors tend to be complex programs that offer many features. These features usually include automatic formatting, multiple fonts, footnotes, out-lining mode, and spell checking. The formatting features consist of word wrap, page numbering, margin justification, centering, etc. Also, word processors usually create files in a special word processing format. Some of the major word processors for the IBM PC are WordPerfect, WordStar, and Microsoft Word. MacWrite, Microsoft Word, and WordPerfect are popular word processors for the Macintosh. It is possible to do word processing on mainframe computers, however this is not encouraged here at UNT because it ties up these computers' resources and word processing is done more efficiently on microcomputers.

When editing a document, all the features of a word processor are very, very useful. However, for program editing, these features can quickly turn into a nightmare. For example, justification, word wrap, page numbering, and spell checking can greatly increase the amount of work for the programmer because he must circumvent these features to produce the format required by the programming language compiler. Also, language compilers will not accept files in a word processor format.

Program editors can be simple programs with only a few special features, or they can be complex programs with multiple features intended to make the process of writing programs easier. A simple program editor would, at most, include cut and paste and find/replace functions. At the other end of the spectrum, the most complex type of program editor is known as the language sensitive editor. The language sensitive editor contains information about the program language being edited. Based on this information, the language sensitive editor will show most programming syntax errors during the editing

TABLE OF CONTENTS

GENERAL INFORMATION

Text Processing: Word Processors, Program Editors, and Desktop Publishing Software.....	1
DECstation 3100 Available for Evaluation in the Graphics Lab	3
The COM-LETE Solution to Text Processing.....	4
Staff Activities.....	4
New Modems Installed on Dial-Up Lines	4
Changing Your CMS Password	4
Computing in the Arts.....	5
BITNET Mail Problems.....	9
The BITNET Connection.....	10
LIST of the Month	12
<i>Benchmarks</i> Forum	12
1989 Fall Short Course Schedule	13

MICROCOMPUTERS

Choosing a Desktop Publishing System	16
Is Desktop Publishing Right for You?16	
AppleSEED Meeting Scheduled	17
Using WordPerfect 5.0 With Style.....	20
WordPerfect User's Group Forming..	22
WordPerfect 5.1 Upgrade Highlights.	23
MICRO-TIPS.....	23

VAX COMPUTER CLUSTER

Are Your MAIL Message Lines Too Long?	24
Best of the BBS	24
VAXcluster Usage Statistics	25

COMPUTING TECHNICAL SERVICES

Mainframe Performance Statistics ...	26
Disk Backup Schedules.....	27
ACADemic Program Hit Parade	28

stage. This saves the programmer much time that was previously spent discovering syntax errors by compiling programs. Program editors save files in straight ASCII format, thus allowing compilers to read them. Program editors are not particularly useful for document editing, however, since they only allow limited text formatting.

Editor Programs on the ACADemic NAS/8083

Both MUSIC/SP and VM/CMS, the primary operating systems on the IBM-compatible NAS/8083

mainframe computer, support general-purpose editor programs. The EDIT command invokes the MUSIC Context Editor (TEDIT for mixed-case editing). On CMS, XEDIT is the name of the editor program. On both systems, the editors can be used for text processing or program development. Both editors support several types of

search commands and find/replace commands as well as many other editing functions. Neither editor, however, is a word processor: on both systems, a second program is needed to do any actual formatting of text output.

The MUSIC context editor has several features which can be advantageous to the experienced user. There are a set of commands which perform column-oriented manipulations and another set which can be used to copy, move, delete, or store marked blocks of lines. MUSIC also supports the creation of editor macros in the REXX language allowing you to customize some editor functions. The MUSIC editor was developed to replace punched card

input and it still retains some vestiges of that now obsolete input format.

On punched cards, columns 1-72 were used primarily for program source code, while columns 73-80 were generally reserved for comments: the full-screen MUSIC editor only displays 72 columns at one time (columns 1-72, by default). Since the editor was intended for working with eighty-column card images, word-oriented features like word wrap and word to word cursor movement are not supported (although it is possible to have these features when using PC Work Station - the PC program takes care of the word-oriented

The type of editor you need is determined by the type of activity you perform on your computer. If you mostly program, you will need a program editor - if you mostly do word processing, a word processing program may fulfill all of your editing needs. Some people will need both types of editors. It is most important, however, to match the features of the editor you select to the job you need to do.

operations). The context editor is best suited for developing programs to be compiled and run within the IBM Mainframe software systems.

XEDIT on CMS is similar to, but much more powerful than the MUSIC context editor. Like the MUSIC editor, XEDIT supports editor macros. It also makes use of both a command line and a prefix command area. Individual lines or blocks of lines can be manipulated by entering single- or double-character commands in the prefix area. The default edit mode of XEDIT is upper case, but mixed case editing is also supported. XEDIT also has a *power typing* mode which will allow text to be entered with a word wrapping function supported. There is also a macro accessible from XEDIT which

allows lines of a file to be sorted from within the editor. XEDIT provides a very powerful editing environment useful for writing programs or manipulating data.

Editor Programs on the VAXcluster

VAX/VMS, the primary operating system on the VAXcluster, supports two general-purpose editor programs: EDT and TPU. The EDIT command invokes the EDT Editor. The TPU (Text Processing Utility) Editor is invoked by the EDIT/TPU command. Both editors can be used

for text processing or program development. Both editors support several types of search commands and find/replace commands as well as many other editing functions. EDT is not a word processor. TPU has many word processing features, but in reality the TPU editor is much better at text processing and program development.

EDT can function as both a line editor and a full screen editor. The EDT editor has several features which can be advantageous to the experienced user. There are a set of commands which can be used to copy, move, delete, or store marked blocks of lines. EDT has initialization files which provide an easy way to customize editor features, such as the keypad layout. By default, EDT does not have word wrap, but this feature can be turned on by the user. EDT is best at program editing on the VAX, not word processing.

TPU is a very powerful, fully programmable editor. For experienced EDT users, TPU even provides an EDT emulation mode. If the EDT emulation mode is not used, the most common version of TPU

used is known as EVE (Extendable VAX Editor). TPU has all the features of EDT except line editing, and in addition has many more functions. First, TPU has its own programming language. This programming language can be used to add new editor features or to write custom text processing programs. Also, macro capabilities (known as learn sequences) are available in TPU. In addition, TPU supports the editing of multiple files simultaneously and can even display 8 files at the same time on a standard 24 line terminal. TPU allows the execution of DCL (VMS) commands from within the editor. By default TPU is in word wrap mode, but this can be deactivated. TPU can be used for minimal word processing, but any user who needs advanced word processing features will find TPU lacking in these areas. TPU is much better suited for text or program editing.

Microcomputer Editor Programs

Some program editors for the IBM PC are PE, QEDIT, and EDWIN. PE is a program editor similar in operation to WordPerfect. PE is sold by the WordPerfect corporation as part of WordPerfect Library and WordPerfect Office. QEDIT and EDWIN are shareware program editors which are similar in many respects to WordStar. These three program editors use most of the same keystrokes and have some of the features of their counterpart word processors. This similarity allows the user to quickly learn the program editor if they know the word processor. On the Macintosh, a text editor called TeachText is included with the Macintosh system. The Borland Turbo series of compilers include their own program editors that are well integrated with the compiler. In fact, many people use the Turbo editor for their generic program editor.

Word processors and program editors usually have a few common features. The most important of

these is a cut and paste function. All programmers and people doing word processing need to move blocks of text. Another feature usually common to both is the inclusion of find and replace functions. The type of editor you need is determined by the type of activity you perform on your computer. If you mostly program, you will need a program editor - if you mostly do word processing, a word processing program may fulfill all of your editing needs. Some people will need both types of editors. It is most important, however, to match the features of the editor you select to the job you need to do.

Desktop Publishing Software

Desktop publishing (DTP) software adds another level of complexity to the world of text processing. DTP software combines many features common to both program editors and word processors. However, DTP programs are much more powerful than either straight word processors or program editors as far as composing documents is concerned. They do not, in general, have all the "neat" features of a word processor (such as automatic find and replace and spelling checkers), however. It is for this

reason that most desktop publishing software works with word processing programs. People usually create text files within a word processor and then import them into a document created with the desktop publishing software. The document is then assembled using the powerful tools of the DTP system so that it ends up looking as if it has come from a professional printing service (if you did a good job). It is even possible to combine text and graphics in many varied and pleasing ways.

Many "high end" word processors have entered the "low end" of the desktop publishing world. WordPerfect and Microsoft Word, which run on both IBM-compatible and Macintosh systems, are examples of quasi-desktop publishing systems. They are full-featured word processing programs and they combine some features of desktop publishing systems. For many people, this is as close to desktop publishing as they need to get. If you are looking for full-fledged, What-you-see-is-what-you-get (WYSIWYG) desktop publishing, you should probably look at one of the leading DTP systems, however. Currently, Xerox Ventura Publisher, for IBM PCs and compatibles and Pagemaker, for IBM PCs and compatibles and Macintoshes, are the industry standards.

DECstation 3100 Available for Evaluation in the Graphics Lab

Digital Equipment Corporation (DEC) will be loaning the University an evaluation DECstation 3100 computer for several months starting approximately November 1st. The DECstation 3100 is a RISC based Unix workstation with 14 MIPS and 3.7 MFLOPS of performance. Software packages that will be included with the evaluation machine are Ultrix (DEC's Unix), X-Windows, TCP/IP, NFS, C, and FORTRAN-77. In addition, DEC is attempting to acquire an evaluation copy of AUTOCAD for this machine. List prices for the DECstation 3100 start at \$11,900 and educational discounts are available. The DECstation 3100 will be housed in the Graphics Lab during the evaluation. Anyone who is interested in seeing a demonstration or in actually using the machine during the evaluation should contact Billy Barron at 565-2324 to set up a time.

The COM-LETE Solution to Text Processing

By Janis Burkham, Academic Database Consultant (BITNET: AC55@UNTVM1)

One of the more advanced editors available in the IBM-type mainframe environment is the full-screen text editor utility, UEDIT, which is accessible through COM-LETE, Software AG's new extended function, high performance, teleprocessing system.

Using COM-LETE, members of an OS PDS can be accessed which may contain documentation, JCL, programs, data, or any other type of information that one might store in a PDS. By using UEDIT, these members can be edited using a full range of editor capabilities such as insert, delete, move, copy, repeat, scan/replace, split, join, window, position within the member, and hexadecimal editing.

From a broader viewpoint, UEDIT allows for a personally customized edit profile encompassing user-defined program function keys, edit tabs, and sequence numbers. If the member is to be executed, remote job entry can be accomplished within the edit session.

An especially nice feature available within UEDIT is COM-LETE's program suspension facility which saves an edit session in its current status while the user temporarily utilizes other COM-LETE utilities. After those tasks are completed, the user can recall the edit session exactly as it was left.

Another time-saving feature of UEDIT allows for multiple edit subcommands to be entered per one screen entry.

Although UEDIT is somewhat different from other text editors available on IBM-type mainframe systems such as MUSIC or CMS, online help facilities are available to smooth the learning curve.

If you have access to Academic COM-LETE, UEDIT has many preferable features that may well meet all of your text processing needs and more... §

Staff Activities

Dave Molta, Director of Academic Computing Services, has been selected to serve on the advisory panel of *Networld '90* which will take place in Dallas next year. Molta was chairman of the Education Seminar Track of this year's *Networld*, also in Dallas, and moderated a session on "Computer Networks in Higher Education: an Overview."

Janis Burkham, Academic Database Consultant, was featured in the *Business Computer Information Systems News* (Summer 1989), as "a good example" of BCIS graduates. Burkham graduated Cum Laude in Accounting Computer Information Systems and was one of the first three graduates to receive a masters degree in Computer Information Systems.

Panu Sittiwong, Statistical Consultant, and Dr. Neal Tate of the Political Science Department published an article in the August issue of *Journal of Politics*. The article is titled "Explaining the Decision Making of the Canadian Supreme Court, 1949-1985: Extending the Personal Attributes Model Across Nations." §

New Modems Installed on Dial-Up Lines

By Mike Maner, Data Communications Coordinator

Data Communications has installed sixteen new 2400 baud MODEMS to replace those on the 565-3300 rotor. These MODEMS provide a new local dial-up access 2400 baud service for the 565-3300 rotor. It will still be possible to use 300 and 1200 baud with the new MODEMS as well as MNP class 5 error correction and data compression to yield higher total throughput for people who have equipment that can take advantage of these features. §

Changing Your CMS Password

By Janis Burkham, Academic Database Consultant (BITNET: AC55@UNTVM1) and Philip Baczewski, IBM Interactive Systems Coordinator (BITNET: AC12@UNTVM1)

The recent installation of a new program on CMS has made it possible to change your CMS log-on password. Changing your password on CMS is accomplished through use of a user directory maintenance program called DIRMAINT. To change your password, log onto CMS and type:

```
DIRM PW <RETURN>
```

DIRMAINT will respond with the following message:

```
004R - Enter new CP logon password:
```

At this point, enter a string of characters which is at least four characters long (up to eight characters) and press <RETURN>. You will then see the message:

439R - Please enter your new password again for verification:

Type your new password again and press <RETURN>. You will then be asked to type your current password to verify the change of password. The next time you log onto CMS, you should be able to use your new password.

Passwords on CMS expire after a period of 180 days. DIRMAINT will warn you of your password's expiration starting 30 days before it expires. If your password expires without your changing it you will have several chances to log on and change it. If you fail to change your password before your "grace period" is over, however, you will not be able to log on to your ID and will need to come to the offices of Academic Computing Services to have it changed for you.

Please note that as a security precaution, DIRMAINT will not allow you change your password to one which you have used previously. DIRMAINT also maintains a list of restricted passwords that you will not be able to use.

To find out if the password you wish to use is acceptable to the DIRMAINT system, type

DIRM TESTPW <RETURN>

Just as in changing your password, you will be asked to enter a new password and then enter it again for verification. You will also be required to enter your current password. Instead of changing your password, however, DIRMAINT will return a message telling you if your proposed new password is valid or invalid.

For more information on these commands type

HELP DIRM PW <RETURN>

or

HELP DIRM TESTPW <RETURN>

DIRMAINT can also help you perform other tasks related to defining aspects of your CMS machine. Listed below are some other useful commands. To get help or find out more information about a command, type:

HELP DIRM command

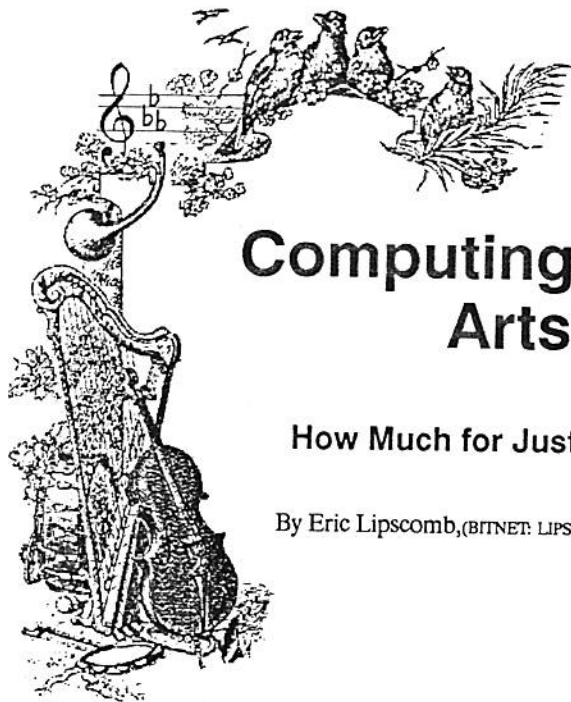
To execute any of these commands, type:

DIRM command

NOTE: This is a new product on our system, and there may be some problems yet to be discovered in its operation. If you experience problems using commands for general users, please report them to Academic Computing Services (x.2324).

- **ACCount** - Changes or displays the current account number that is charged for your virtual machine. Enabled through the DIRAINT DATA entry.

Continued on page 10.



Computing In The Arts

How Much for Just the MIDI?

By Eric Lipscomb, (BITNET: LIPS@UNTVAX)

Computer retailers are hearing about it. Music store sales people are buying and selling it. Musicians and students are talking about it. Professional writers are publishing articles about it. Entire magazines are devoted to it. Students at the Massachusetts Institute of Technology are receiving large grants to research it. Joe "Keys" Manzotti uses it when he plays with his band at the Holiday Inn on weekends. Just what is this MIDI thing anyway?

MIDI stands for Musical Instrument Digital Interface and has been the rage among electronic musicians throughout its six year existence. It is a powerful tool for composers and teachers alike. It allows musicians to be more creative on stage and in the studio. It allows composers to write music that no human

could ever perform. But it is not a tangible object, a thing to be had. MIDI is a communications protocol that allows electronic musical instruments to interact with each other.

A Method, Not An Object

All too often I have seen misinformed customers browsing through a music store: "Where do you keep your MIDI's?" "I'd like to get a MIDI for my home computer." "I need to get two MIDI's so they can talk to each other, right?" Explaining to customers that they cannot just get a MIDI becomes frustrating to the salesman. Fortunately, the average consumer is learning more about the concept of MIDI through articles such as this one. To have a complete understanding of how MIDI works, though, one should learn its history.

The Saga of MIDI

The combined advances and cost-efficiency in synthesizer technology caught the music world by storm. At times, a musician could not get a new synthesizer home before it had been outdated by a new product. One major factor in the increased popularity in synthesizers, and the increased push for research and design of these units, was the development of new sound generation methods. Musicians were creating new and different sounds worldwide. Eventually, the musical world began to recognize the synthesizer as a legitimate musical instrument.

Musicians were physically limited, though, because they had only two hands. Popular and avant-garde performers alike desired to "layer" their new sound creations, to play two sounds together to create a "larger" sound. Though this was possible to some extent in a multi-track recording studio, layering could not be realized on the road. A few synthesizer design technicians from different manufacturers then got together to discuss an idea they shared. Surely,

they said, there had to be a way to play one keyboard and have another one sound simultaneously. They jotted a few notes, considered a few options, and scuttled back to their design labs to create this communication method.

They revealed their results at the first North American Music Manufacturers show in Los Angeles in 1983. The simple demonstration connected two synthesizers, not manufactured by the same company, with two cables. A representative from one company then played one of the synthesizers while an amazed audience heard both sound. The process was then reversed to demonstrate the two-way nature of the communication. Other variations were illustrated, and the rest is music history.

The Method of MIDI

Much in the same way that two computers communicate via modems, two synthesizers communicate via MIDI. The information exchanged between two MIDI devices is musical in nature. MIDI information tells a synthesizer, in its most basic mode, when to start and stop playing a specific note. Other information shared includes the volume and modulation of the note, if any. MIDI information can also be more hardware specific. It can tell a synthesizer to change sounds, master volume, modulation devices, and even how to receive information. In more advanced uses, MIDI information can indicate the starting and stopping points of a song or the metric position within a song. More recent applications include using the interface between computers and synthesizers to edit and store sound information for the synthesizer on the computer.

The basis for MIDI communication is the byte. Through a combination of bytes a vast amount of information can be transferred. Each MIDI command has a specific byte sequence. The first byte is the status byte, which tells the MIDI device what function

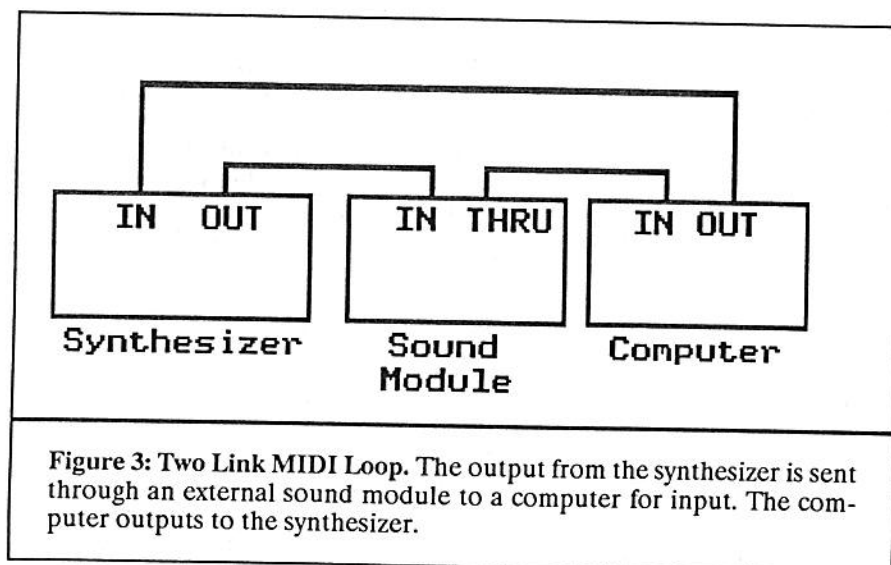
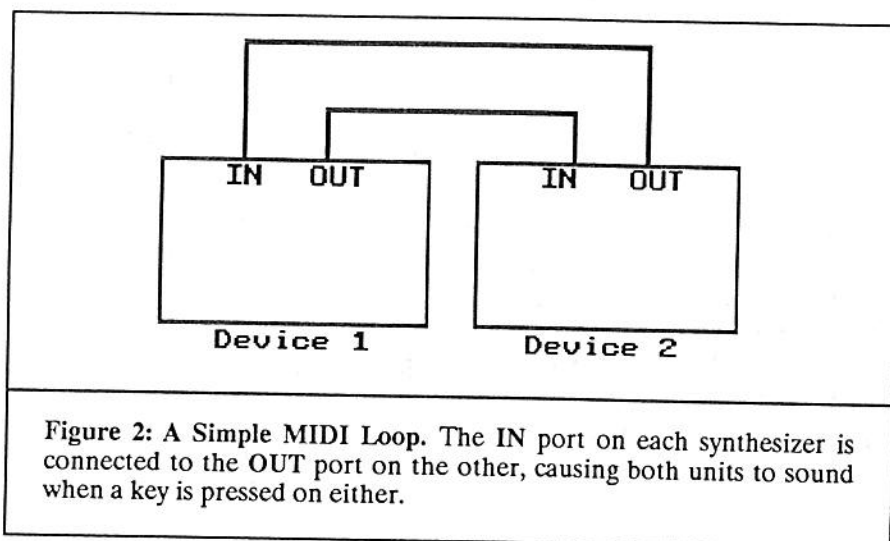
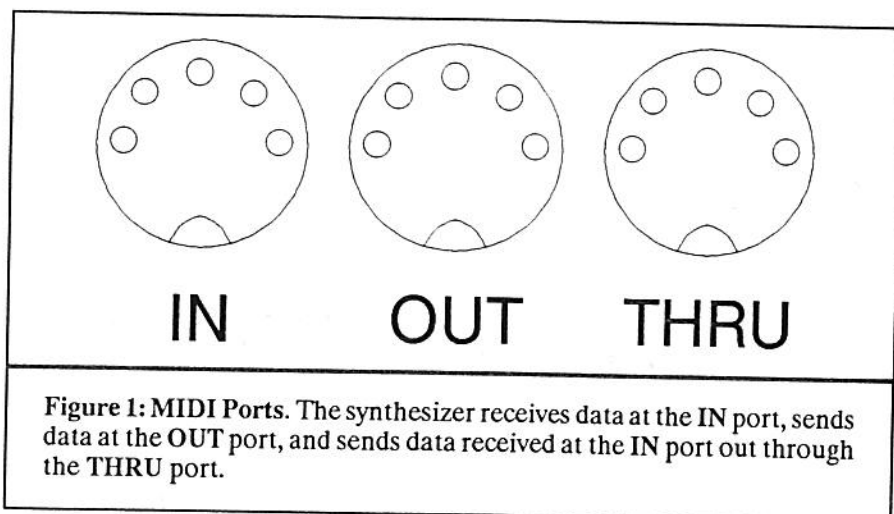
to perform. Encoded in the status byte is the MIDI channel. MIDI operates on 16 different channels, numbered 0 through 15. MIDI units will accept or ignore a status byte depending on what channel the machine is set to receive. Only the status byte has the MIDI channel number encoded. All other bytes are assumed to be on the channel indicated by the status byte until another status byte is received.

Some of these functions indicated in the status byte are Note On, Note Off, System Exclusive (SysEx), Patch Change, and so on. Depending on the status byte, a number of different byte patterns will follow. The Note On status byte tells the MIDI device to begin sounding a note. Two additional bytes are required, a pitch byte, which tells the MIDI device which note to play, and a velocity byte, which tells the device how loud to play the note. Even though not all MIDI devices recognize the velocity byte, it is still required to complete the Note On transmission.

The command to stop playing a note is not part of the Note On command; instead there is a separate Note Off command. This command also requires two additional bytes with the same functions as the Note On byte. Most people are confused at first by this approach to Note On and Note Off, but after further thought they realize the necessity of the structure.

Another important status byte is the Patch Change byte. This requires only one additional byte: the number corresponding to the program number on the synthesizer. The patch number information is different for each synthesizer, and the standards have been set by the International MIDI Association (IMA). Channel selection is extremely helpful when sending Patch Change commands to a synthesizer.

The SysEx status byte is the most powerful and least understood of all the status bytes because it can instigate a variety of functions. Briefly, the SysEx byte requires at least three additional bytes. The first is a manufacturer's ID number or timing



byte, the second is a data format or function byte, and the third is generally an "end of transmission" (EOX) byte. There are a number of books that have been written on the topic of System Exclusive messages, so this article will not deal with it further.

The INs and OUTs of MIDI

The closest most people ever care to get to the heart of the MIDI interface are the three 5-pin ports found on the back of every MIDI unit. Labeled IN, OUT, and THRU, these ports control all of the information routing in a MIDI system. The IN port accepts MIDI data, data coming "in" to the unit from an external source. This is the data that controls the sound generators of the synthesizer. The OUT port sends MIDI data "out" to the rest of the MIDI setup. This data results from activity of the synthesizer, such as key presses, patch changes, and so on. The THRU port also sends data out to the MIDI system, but not in the same manner as the OUT port. The data coming from the THRU port is an exact copy of the data received at the synthesizer's IN port. There is no change made to the data from the time it arrives at the IN port to the time it leaves the THRU port (which is a very, very small amount of time).

MIDI makes use of special five conductor cable to connect the synthesizer ports. Curiously though, only three of the conductors are actually used. Data is carried through the cable on pins 1 and 3, and pin 2 is shielded and connected to common. Pins 4 and 5 remain unused. Not just any cable will suffice for the exactness of the MIDI system, either. MIDI cable is specially grounded and shielded to ensure efficient data transmission. This means that MIDI cable is a little more expensive than standard 5-conductor cable, but reliable data transmission is absolutely necessary for MIDI.

The length of the cable is critical as well. IMA specifications suggest an absolute maximum cable length of 50

feet because of the method of data transmission through the cable. The entire length of a MIDI chain (discussed below) is unlimited, however, provided that none of the links are longer than 50 feet. The optimal maximum length for cable is about 20 feet, and most commercially manufactured cable comes in five to ten foot lengths.

MIDI Chains and Loops

A MIDI chain describes a series of one-way connections in a MIDI setup. The elemental chain is a single-link chain. The MIDI OUT port of one device is connected to the

MIDI IN port of a second. In this configuration, a key pressed on the first unit will cause both units to sound. Pressing a key on the second unit, however, only causes the second unit to sound. Many instruments may be chained together using a series of single links to connect the units. In this case, the OUT of the first unit is connected to the second,

the THRU of the second is connected to the IN of a third, and so on. If all the units are set to receive on the same channel, pressing a key on the first one will cause all the units to sound. Pressing a key on any of the other units will only activate the sound of that unit.

A MIDI loop is a special configuration of a MIDI chain. The single element loop is made of two interconnecting links. This was the configuration used in the debut of the MIDI system. The OUT port of the first unit is connected to the IN port of the second, and the OUT port of the second is connected to the IN port of the first. In this case, as described earlier, a key pressed on either unit causes both units to

sound, provided they are on the same channel. A MIDI feedback loop does not exist here, as the data going into the second unit from the first is not duplicated in the OUT port of the second going back into the first. Here, we have two one-way links connected, not a multi-link chain.

MIDI loops connecting several devices using all three ports can become complex very quickly. As a brief example, imagine four synthesizers named A, B, C, and D for convenience. A's OUT is connected to B's IN and consequently to C's IN via B's THRU. B's OUT connects to D's IN, whose THRU connects to A's IN. A key pressed on A sounds A, B and C. A key pressed on C sounds C

same language. Since the MIDI data transmission rate (31.5 kBaud) is different from any computer data rate, manufacturers had to design a MIDI interface to allow the computer to talk at MIDI's speed. Apple Computers, with the Macintosh and Apple II series, and Commodore were the first companies to jump on the MIDI computer bandwagon [pun intended]. Roland designed an interface for the IBM series of compatible computers a few years later, and Atari designed a completely new computer, the ST series, with fully operable MIDI ports built in. Today, there are many different interfaces available for almost all types of computer system.

The computer can send data out on all 16 MIDI channels simultaneously. For example, sixteen MIDI devices, each set up for a different MIDI channel, could be connected to the computer. Each unit could be playing a separate line in a song from the sequencer, creating an electronic orchestra. This implementation is being used more and more in today's music scenes: the recording studio, major orchestras, opera, and film scoring.

As great as the number of available interfaces may be, the availability of software packages is almost beyond belief. Virtually everything that can be done via MIDI has a software package to do it. First came the sequencers. Based on a hardware device that simply recorded and replayed MIDI

and C alone. A key pressed on B sounds B, D, and A, while a key pressed on D sounds D only. C does not sound when B is pressed because there is no direct connection between B and C, and B's note, which does route through D, does not route through A into C because A's THRU is not connected to C, or anything else for that matter. A note played on A does not sound on D for the same reason. You get the idea.

Computers and MIDI

Computer manufacturers soon realized that the computer would be a fantastic tool for MIDI, since MIDI devices and computers speak the

data, the software sequencer allowed the computer to record, store, replay, and edit MIDI data into "songs." Though the first sequencers were somewhat primitive, the packages available today provide very thorough editing capabilities as well as intricate synchronization methods, such as MTC (MIDI Time Code) and SMPTE.

Various patch editors and librarians are also available for computers. These programs allow the user to edit sounds away from the synthesizer and often in a much friendlier environment than what the synthesizer interface offers. The more advanced librarians permit groups or banks of sounds to be

edited, stored on disk, or moved back and forth from the synthesizer's memory. They also allow for rearranging sounds within banks or groups of banks for customized libraries. These programs are generally small and can be incorporated into some sequencing packages for ease of use. On the other hand, each synthesizer requires a different editor/librarian since internal data formats are unique for each. Some packages offer editor groups for a specific manufacturer's line as some of the internal data structure may be similar between the units. But, there is not yet a universal librarian that covers all makes and models of sound modules; it would just be too large.

Computers in MIDI Chains

Basically, the computer functions the same as any other unit in a MIDI chain or loop. Most interfaces have the same three ports as other MIDI devices. The computer's main job in a chain, though, would be as a MIDI data driver, meaning it would supply

the MIDI data for the rest of the chain. Very rarely is a device connected to the IN port of a computer MIDI interface except to provide input for synchronization signals or data to edit. Even more rare is a connection to the computer's THRU port, although it can be used.

In this scope the implementation of MIDI channels is most effective. The computer can send data out on all 16 MIDI channels simultaneously. For example, sixteen MIDI devices, each set up for a different MIDI channel, could be connected to the computer. Each unit could be playing a separate line in a song from the sequencer, creating an electronic orchestra. This implementation is being used more and more in today's music scenes: the recording studio, major orchestras, opera, and film scoring.

The Future of MIDI

The MIDI specifications set out by the initial design team have not changed drastically since its creation. The current data structure is as it was originally designed, the only excep-

tion being that some of the initial status bytes were not initially defined. As it stands, the architecture of MIDI does not allow for any further expansion. To enhance MIDI further would take a complete redesign of the system. The IMA has been discussing new MIDI designs, but industry and the general public will prevent any real action from taking place because the new design would not be backwards compatible: none of the current MIDI hardware would operate in the new environment.

But MIDI does continue to hold promise. The extent of the SysEx applications has not yet been fully realized. MIDI is by no means about to become outdated or abandoned by the musical world, and as technology becomes more and more affordable, a greater number of non-technical people will invest in their own personal MIDI systems. There may in fact be a day where the average American family has a home, two cars, three kids, and their own MIDI in the garage.

References

- Arnell, Billy. "McScope: System." *Music, Computers, and Software* April 1988: 58-60.
- Conger, Jim. *C Programming for MIDI*. Redwood City: M & T Books, 1988.
- Cooper, Jim. "Mind Over MIDI: Information Sources and System-exclusive Data Formats." *Keyboard* October, 1986: 110-11.
- Enders, Bernd and Wolfgang Klemme. *MIDI and Sound Book for the Atari ST*. Redwood City: M & T Books, 1989.
- Matzkin, Jonathan. "A MIDI Musical Offering." *PC Magazine* 29 Nov. 1988: 229+.
- Peters, Constantine. "Reading up on MIDI for the Novice and the Pro." *PC Magazine* 29 Nov. 1988: 258.

Eric Lipscomb is a Vice President of the International Electronic Musicians User's Group, an organization devoted to the advancement of knowledge about MIDI and other aspects of electronic music. In his spare time he writes for and performs with the comedy group "Green Chili Burp and the Aftertaste."§

BITNET MAIL PROBLEMS

Recently, because of a series of problems on the BITNET network, we have been experiencing problems with mail delivery from MUSIC and CMS to various BITNET and INTERNET hosts. We are currently in the process of installing a new mailer program which may help alleviate some of these problems, however, if you are sending time-critical messages on BITNET, it may be best to request a reply from your correspondent. If no response is received it may be advisable to follow up with a second mail message, or even (if the situation requires it) with communication via U.S. mail or telephone.

Many changes have been occurring on BITNET lately and as a result, situations have developed causing problems with communication between some nodes. Solutions for some of these problems require action by more than one BITNET node in order for all nodes to be operating with the same network information. The recent move of the BITNET Network Information Center from Princeton to Washington D.C. and the resultant changes in personnel and operating procedures have complicated matters even more. The UNT Computing Center is actively involved in pursuing solutions to the BITNET MAIL problems we have been experiencing. We are hopeful that the coming months will bring stability to the situation as well as a greater level of reliability BITNET mail services.§

Continued from page 5.

NOTE: At this installation, use 'ACCount ?' to display the current account number. Account numbers cannot be changed.

- **BATCh** - Allows a group of DIR-MAINT commands to be submitted in a file.
- **MDisk** - Adds, deletes, or changes minidisk link passwords.
- **MDPW** - Displays the value of your minidisk passwords. If minidisk password monitoring is in effect, a time stamp (mm/dd/yy) will be included for passwords that were changed.
- **PW** - Changes your CP logon password. Incorporated into this is an additional security feature preventing you from reusing passwords previously used.
- **PW?** - Queries the date and time of the last CP logon password change. If the WARN option is specified, no response is returned unless your password change status is within the warning period.
- **REview** - Displays directory control statements (excluding passwords), all user IDs for which you have ASSIGN privileges, and current status of LINKS (enabled/disabled). All users that have authority to act FOR this virtual machine are included. Also displayed is a list of all links to minidisks owned by this virtual machine including the user ID of the linker, link mode, and the virtual address they have it linked as.
- **TESTpw** - Checks a proposed new CP logon password for acceptability under installation policies.\$

THE BITNET CONNECTION

By Philip Baczewski, BITNET INFOREP(BITNET: AC12@UNTVM1)

*This Column is a continuing feature of **Benchmarks** intended to present news and information on various aspects of the BITNET wide area network.*

Is Anyone Out There??

Has this happened to you? You're staring at your telephone - you need to call Bill Jones - you don't know his telephone number. "No problem," you think. All you have to do is call directory assistance, but first, you will need to consider a few things about Bill Jones. The directory assistance number you dial may vary depending upon whether Mr. Jones lives in the same area or a different area than you do. Once you decide upon the correct number, there may be more than one Bill Jones living in that area, so you may need to know an additional piece of information like a middle initial or street address. Once all of these considerations have been met, you will then most likely acquire Bill Jones' number, make your call, and then sit back and wait for the fifty cent directory assistance charge to show up on your phone bill.

Maybe this has also happened to you: you are sitting at your computer terminal - you need to send a BITNET message to Bill Jones - you don't know his BITNET address. While there is no comprehensive directory of BITNET users, there are several methods you can use to try to find a BITNET address for a colleague at another institution. The most direct approach is to use one or more of the *directory servers* maintained on BITNET.

A directory server (sometimes called a *name server*) is a program which provides the BITNET address for a specified name or vice versa: it will accept information such as someone's name (or a portion of their name) or BITNET ID and usually returns their full name and BITNET address. Some BITNET nodes maintain directories listing only their local users. Other nodes maintain directory servers where anyone on BITNET may register. Also, some of the LISTSERV installations on BITNET support a /WHOIS command which allows you to look up the name and address of anyone who has used that LISTSERV to subscribe to a mailing list. Included with this discussion is a list of directory servers and the LISTSERV installations which accept the /WHOIS command. (You can also find this same list in the BITNET.SERVERS file on the VAX or MUSIC).

Before finding the directory server that might have our friend Bill Jones' BITNET address, you will first need to consider a few things. Among the information you may need to know is the name of Bill's university, the name of the BITNET nodes at that university (if you know the university name, you can use the FINDNODE utility to discover the node names), and where the university is geographically located. Once those pieces of information have been considered, you can begin the search for Mr. Jones' BITNET address.

Your task is easiest if there is a directory server at Bill's university. If this is the case, you can send a command to search for Bill's name. We can use NAMESERV@BRANDEIS as an example. It supports two commands: HELP and SEARCH. To search for a name, on the VAX for example, you could enter the command:

SEND NAMESERV@BRANDEIS SEARCH JONES

(You can also send a mail message with **SEARCH JONES** as the first line.) By default, NAMESERV searches a list of last names, but you can use qualifiers to search a different list of names:

/FIRST	First names
/LAST	Last names
/FULL	Full names
/GROUP	Group/department names
/USER	Usernames (IDs)

For example, to search for users in the English department, you could send the command **SEARCH/GROUP ENGLISH**. Here we've used **NAMESERV@BRANDEIS** as an example; however, not all directory servers use the same commands. To find out how to use a particular server, you can usually send it the command **HELP** or **?**.

If there is not a directory server at Bill's university, you could check the name servers that allow general registration. **UMNEWS@MAINE** and **NAMESERV@DREW** are two servers on which any BITNET user can register their name and BITNET address. To register with **NAMESERV@DREW**, for example, you could send the command

REGISTER firstname lastname keyword1... keyword5

If your name is John Smith and your interest areas are Physics and FORTRAN, you might send

REGISTER John Smith Physics FORTRAN

The general-use directory servers are only useful if people have actually registered. If Bill hasn't registered at one of these, however, you have an additional set of BITNET servers to try.

There are currently twenty-five **LISTSERV** installations that support the **/WHOIS** command. If Bill is subscribed to a mailing list on any of those, you could find his BITNET address by sending the **LISTSERV**

User Directory Servers

BITNET Address	Institution	Accepts Commands Via
BITSERVE@CUNYVM	City University of New York	MESSAGE
UMNEWS@MAINE	University of Maine	MESSAGE
COMSERVE@RPIEC	Rensselaer Polytechnic Institute	MAIL or MESSAGE
DATABASE@BITNIC	BITNET Network Information Ctr	MAIL or MESSAGE
FINGER@CUVMA	Columbia University	MESSAGE
FINGER@NDSUVM1	North Dakota State University	MESSAGE
FINGER@SPCVXA	Saint Peter's College	MESSAGE
IDSERVER@PSUVM	Pennsylvania State University	MESSAGE
INFO@IRUCCIBM	Cork University	MAIL
INFO@RITVAXD	Rochester Institute of Technology	MESSAGE
LOOKUP@RITVM	Rochester Institute of Technology	MESSAGE
PHSERVE@UIUCVMD	University of Illinois	MAIL or MESSAGE
NAMESERV@BRANDEIS	Brandeis University	MAIL or MESSAGE
NAMESERV@DREW	Drew University	MAIL or MESSAGE
NAMESERV@UNCAMULT	University of Calgary	MAIL
UTSERVER@UTKVM1	University of Tennessee	MESSAGE
VMNAMES@UREGINA1	University of Regina	MESSAGE
VMNAMES@WEIZMANN	Weizmann Institute of Science	MESSAGE
WHOIS@ALBNYVM1	State University of New York	MAIL or MESSAGE
WHOIS@UKCC	University of Kentucky	MAIL or MESSAGE

LISTSERVs which will accept the /WHOIS command:

MAIL or MESSAGE

LISTSERV@AUV	American University
LISTSERV@BUACCA	Boston University
LISTSERV@CEARN	Centre Europeen de Recherche Nucleaire
LISTSERV@CMUCCVMA	Carnegie-Mellon University Computation Center
LISTSERV@DBNGMD12	GMD Bonn, Germany
LISTSERV@DEARN	GMD Bonn, Germany
LISTSERV@ESOC	European Space Operations Center
LISTSERV@FARMNTON	University of Maine, Farmington
LISTSERV@IBACSATA	CSATA Ctr Studi Applic in Tec Avanzate
LISTSERV@LEHIIBM1	Lehigh University
LISTSERV@MAINE	University of Maine
LISTSERV@MARIST	Marist College
LISTSERV@OREGON1	University of Oregon
LISTSERV@PORTLAND	University of Maine, Portland
LISTSERV@RICE	Rice University
LISTSERV@RITVM	RITISC
LISTSERV@SBCCVM	State University of New York - Stonybrook
LISTSERV@SCFVM	NASA Space and Earth Sciences Computer Center
LISTSERV@TECMTYVM	Monterrey Institute of Technology
LISTSERV@UALTAVM	University of Alberta
LISTSERV@UBVM	State University of New York at Buffalo
LISTSERV@UCF1VM	University of Central Florida
LISTSERV@UGA	University of Georgia
LISTSERV@UKANVM	University of Kansas
LISTSERV@YALEVM	Yale University

the command **/WHOIS Bill Jones**. It may be better to start with the **LISTSERVs** which are in the same geographical area: If Bill is in New York, he will be more likely to be served by a **LISTSERV** at Yale University than one at the University of Oregon (although you can't be sure - that one mailing list that in

which Bill is interested may be on **LISTSERV@OREGON1**). It is also possible that Bill has registered at a **LISTSERV** in his area. **LISTSERVs** that support the **/WHOIS** command, also support registration via the command

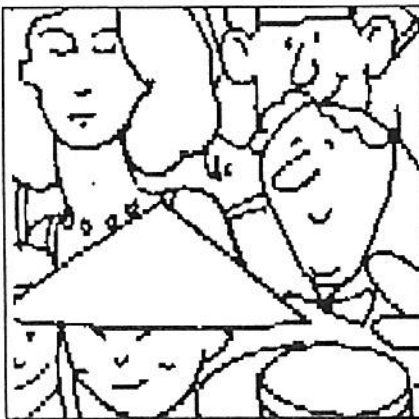
/REGISTER your name

There is one other approach to finding someone's BITNET address by using the network. If you know a node name at Bill's University, you could try sending a politely worded mail message to POSTMAST@<nodename> explaining that you are trying to contact Bill Jones. Not all nodes have a POSTMAST ID. If this is the case, you might try contacting the BITNET INFOREP at that node. To find the INFOREP's BITNET address, send the following command to NETSERV@UCMCMSA

GET NODENTRY<nodename>

The NETSERV will return a file listing information about that node, including the name and BITNET address of the INFOREP.

Of course, if none of the above strategies work, you always have one last resort. You could call directory assistance, get the phone number, dial it and say "hey Bill? What's your BITNET address?"§



BENCHMARKS FORUM

BENCHMARKS FORUM is intended to serve as a vehicle for answering questions that may be of general interest to the user community. If you have a question, please send electronic mail to the Benchmarks editor (BITNET: AS04@UNTVM1) or write it down and

LIST of the Month

Each month we will highlight one of the BITNET LISTSERV Special Interest Group (SIG) mailing lists. This month's list...

XEDIT-L@UGA - VM System Editor Discussion

This list has been created for the discussion of the IBM VM System Editor (XEDIT). If and when XEDIT is made available under TSO, it will be included here. REXX, as utilized by XEDIT as its macro language is acceptable here also.

Editing text files on CMS is accomplished through use of XEDIT, the VM/SP System Product Editor. XEDIT supports a high degree of customization and provides many powerful editing features. Anyone who frequently uses XEDIT on CMS may benefit from the discussions emanating from this mailing list. To subscribe to XEDIT-L, send the following command to LISTSERV@UGA -

SUBSCRIBE XEDIT-L <your full name>

drop it by the Computing Center. We will try to answer it in the next issue.

Question: *How do you set up an on going appointment in the Appointment Calendar in WordPerfect Office/Library?*

Answer: Select AutoDate at the Appointment Calendar menu. In the blank provided for formulas, enter the formula that describes the dates and times you want. For example, if you want to schedule a Monday, Wednesday, Friday class from 9:00-9:50 starting Sept. 1, 1989 through Dec. 16, 1989, you would enter the following formula:

(MON,WED,FRI) & (SEP 1 1989:DEC 16 1989)

These are actually two formulas joined by the ampersand.

We are interested in what you are doing. If you have interesting examples of using the AutoDate function, please send them to Sandy Franklin in the Computing Center. §

Benchmarks Reader/User feedback is encouraged. Send all letters, suggestions, etc to (AS04@UNTVM1), FAX 817-565-4060 or to the Benchmarks Editor at:

Academic Computing Services
University of North Texas
Computing Center
NT Station,
Box 13495
Denton, Texas 76203



1989 Fall Short Course Schedule

Academic Computing Services

University of North Texas

Computing Center

The Computing Center is offering the following short courses for the 1989 Fall Semester. Please pre-register to attend (a registration form can be found at the end of this issue). A maximum of 10 people will be admitted to each of the courses held in ISB 110. A maximum of 8 people will be admitted to each of the courses held in ISB 123.

FACULTY AND STUDENTS HAVE FIRST PRIORITY TO REGISTER FOR THESE CLASSES. STAFF MEMBERS ** MUST ** REGISTER THROUGH THE PERSONNEL OFFICE.

MAINFRAME COURSES

1. **Introduction to MUSIC/SP** - MUSIC/SP is the primary interactive operating system employed by most academic users to access the NAS/8083 IBM-compatible mainframe computer at UNT. MUSIC users have access to a variety of programming languages, a sophisticated word processing

system, and several statistical analysis packages. MUSIC also gives you the capability to submit batch jobs to the MVS operating system. Topics covered include gaining access over the Local Area Network, logging on and off, changing your password, and creating, editing, and storing files using the full-screen editor. Additional topics that may be covered, depending on available time, are: accessing on-line help facilities, using electronic mail, routing output to high-speed printers, and writing files to secondary storage such as disk and tape.

Introductory sessions to MUSIC/SP are held in Room 110 of the Science Library (ISB) on a weekly basis. **NO PRE-REGISTRATION IS REQUIRED FOR THESE COURSES.** Consult the HELP DESK (565-4050) for class dates and times. All courses will be taught by Help Desk staff.

2. **Introduction to IBM Job Control Language (JCL)** - This course provides an overview of IBM JCL for users who wish to further their knowledge in this area. It is useful to individuals who plan to run batch jobs (e.g. SAS, SPSS-X, BMDP) on the IBM-compatible mainframe computer.

A two-hour session to be held in the Academic Computing Conference Room (ISB 123):

- Tuesday, November 14: 9-11 a.m.

Instructor: Janis Burkham

3. **Introduction to SAS** - SAS is one of the most widely implemented data analysis systems within business and education. SAS is particularly well suited for dataset manipulation and includes an extensive procedure library providing a wide range of analytical tools. This course is recommended for individuals who plan to incorporate statistical analyses into their research. Topics covered include the reading of data into SAS, simple

data transformations recoding variables, labeling output, and performing simple univariate and bivariate analyses. **Prior knowledge of MUSIC/SP is required.**

A two-hour session to be held in Room 110 of the Science Library (ISB):

- Wednesday, November 15: 9-11 a.m.

Instructor: Panu Sittiwong

4. **Introduction to SPSS-X** - SPSS-X is the latest version of this popular data analysis system originally developed for social scientific research. While SAS is slightly more powerful for the analysis of complex datasets, many users find SPSS-X to be easier to learn. SPSS-X also includes more flexible facilities for collapsing and labeling variables. This course is recommended for individuals who plan to incorporate statistical analyses into their research. Topics covered include the reading of data into SPSS-X, simple data transformations, recoding variables, labeling output, and performing simple univariate and bivariate analyses. **Prior knowledge of MUSIC/SP is required.**

A two-hour session to be held in Room 110 of the Science Library (ISB):

- Tuesday, November 14: 3-5 p.m.

Instructor: Phanit Loasirirat

5. **Introduction to CMS** - CMS is an interactive operating system employed by some academic users to access the NAS/8083 IBM-compatible mainframe computer at UNT. CMS users have access to a variety of programming languages, a sophisticated text processing system, and several statistical analysis packages. CMS also gives you the capability to submit batch jobs to the MVS operating system. Topics covered include gaining access

over the Local Area Network, logging on and off, changing your password, and creating, editing, and storing files using the full-screen editor. Additional topics that may be covered, depending on available time, are: accessing on-line help facilities, using electronic mail, and routing output to high-speed printers.

A two-hour sessions to be held in the Academic Computing Conference Room (ISB 123):

- Thursday, November 16: 3-5 p.m.

Instructor: Philip Baczewski

6. **Introduction to VAX/VMS** - VMS is the interactive operating system used on the Digital Equipment Corporation (DEC) VAXcluster. The VAXcluster supports a variety of applications. The topics covered in this course include gaining access to the VAXcluster through the Local Area Network, logging in and out, changing your password, creating files and directories, creating login command files, using the EDT editor, and defining logicals and symbols, and electronic mail.

Introductory sessions to VAX/VMS are held in Room 110 of the Science Library (ISB) on a weekly basis. **NO PRE-REGISTRATION IS REQUIRED FOR THESE COURSES.** Consult the HELP DESK (565-4050) for class dates and times. All courses will be taught by Help Desk staff.

7. **Introduction to BITNET** - BITNET is a network linking more than 600 computers at over 300 institutions and research centers. This course covers the basic concepts of BITNET, file transfers across BITNET sites, and other services that are available on this computer network. Faculty and graduate students

needing to exchange information with other universities and research institutions in the U.S., Canada, Europe, or Japan will benefit greatly from attending this course. Prior knowledge of at least one of the following interactive operating systems is required: CMS, MUSIC, VAX/VMS.

Two separate two-hour sessions to be held in the Academic Computing Conference Room (ISB 123):

- Tuesday, September 26: 3-5 p.m.

Instructor: Philip Baczewski

- Monday, November 20: 3-5 p.m.

Instructor: Philip Baczewski

8. **Introduction to ARPA Internet and THENET** - the ARPA Internet is a collection of related computer networks that link thousands of computers throughout the world. THENET is a network that connects 35 universities, research institutions, and state agencies in the state of Texas. This course covers the basic concepts, file transfer, remote login, and other services available on the networks. Faculty and students needing to exchange information with other universities, government agencies, companies and research institutions, or between the various machines on the University of North Texas campus would benefit from this course. **Prior knowledge of at least one of the following interactive operating systems is required: VAX/VMS, Unix, MS-DOS.**

A two-hour session to be held in the Academic Computing Conference Room (ISB 123):

- Wednesday, September 27: 3-5 p.m.

Instructor: Billy Barron

MICROCOMPUTER COURSES

1. **Introduction to Micros (PCs and MACS)** - Introduction to the use of IBM PCs and MAC SEs. Basic concepts and use of each type of microcomputer will be covered.

A two-hour session to be held in Room 110 of the Science Library (ISB):

- Wednesday, November 8: 9-11 a.m.
Instructor: Panu Sittiwong

2. **Introduction to MS/DOS** - MS/DOS is the most popular operating system available for IBM PC and compatible microcomputers. The topics covered in this course include formatting floppy disks, running applications, printing, file manipulation, and directory maintenance.

A two-hour session to be held in Room 110 of the Science Library (ISB):

- Wednesday, November 8: 1-3 p.m.

Instructor: Billy Barron

3. **Using Microcomputers in a Networked Environment** - Special emphasis is placed on the unique features of networked microcomputers. Topics such as accessing file servers and printing to remote printers available to UNT students will be covered.

A two-hour session to be held in Room 110 of the Science Library (ISB):

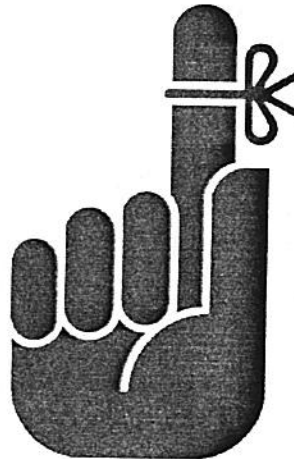
- Wednesday, November 15: 3-5 p.m.
Instructor: Kyle Capps
4. **Introduction to Wordprocessing on the MAC** - Basic wordprocessing on the Macintosh, using Microsoft Word.

A two-hour sessions to be held in Room 110 of the Science Library (ISB):

- Friday, November 17: 3-5 p.m.
Instructor: Kevin Mullet
4. **Introduction to Wordprocessing on the PC** - Basic wordprocessing in an IBM PC environment, using Word-Perfect.

or compatible and the MUSIC/SP operating system. Topics covered will include setting up PCWS communications parameters, connecting to MUSIC over the UNT local area network, using PCWS's full-screen capabilities, and using PCWS for file transfer between MUSIC and the PC. **Introduction to Procomm** presents an overview of the Procomm communications package for Personal Computers or compatibles. Procomm provides several different terminal emulation modes, and supports several file

REMEMBER: faculty members can request "customized" short courses for their classes. These will be taught by a member of Academic Computing Services. To request such a course, contact the Computing Center Offices, 565-2324 (ISB 119).



transfer protocols including KERMIT and XMODEM. Topics covered include setting communications and file transfer parameters, setting up and using Procomm's dialing directory, and connecting to UNT mainframes through the local area network. Another communications package, Kermit, will also be dis-

A two-hour session to be held in Room 110 of the Science Library (ISB):

- Friday, November 17: 1-3 p.m.

Instructor: Kevin Mullet

5. **Introduction to PCWS and Introduction to Procomm** are two short courses that deal with Personal Computer to mainframe communications. **Introduction to PCWS** presents an overview of using PC Work Station, a communications package which is specifically written to allow terminal access and file transfer capabilities between an IBM PC

cussed at the end of the PCWS session.

Separate one-hour sessions to be held in the Academic Computing Conference Room (ISB 123):

- **Introduction to Procomm:** Monday, November 13 2-3 p.m.
Instructor: Kevin Mullet
- **Introduction to PCWS:** Monday, November 13: 3-4 p.m.
Instructor: Kevin Mullet

MICROCOMPUTERS

Choosing a Desktop Publishing System

By Claudia Lynch, *Benchmarks* Editor (AS04@NTSUVV1)

This is a revision of an article by the same name that originally appeared in the March/April/May 1988 issue of Benchmarks. It has been modified to reflect changes in Desktop Publishing technology since that time.

Many people are wondering if they should be purchasing desktop publishing (DTP) software these days. Before investing a lot of time and money in DTP, you should make sure you really need such a product. Start by outlining the tasks you want to accomplish, both now and in the future. Ask yourself searching questions such as: "What style or 'look' do I want my documents to have;" "Do I want to use graphics?" Once you have done this, check your list against the features of high-end word-processing systems such as WordPerfect and Microsoft Word. In many instances, these products will handle all the tasks you wish to accomplish. The May 1988 issue of *BYTE* magazine has an article entitled "Word Processors for Desktop Publishing" that discusses the abilities of 10 different word processing systems. Another article, "Advanced Word Processors -- Familiar Faces, New Features," in *PCWorld* (July 1989), rates leading word processors on categories such as editing, formatting, desktop publishing, and printing. These would be good places to start in your assessment of word processors versus "true desktop publishing systems."

If you decide that you really do need a desktop publishing product, there are still many more decisions to be made. The remainder of this article is aimed at helping you to make these decisions.

Desktop Publishing Products

There are many products on the market that claim to offer desktop publishing capabilities. Many are WYSIWIG (What-you-see-is-what-you-get) systems, although some are command driven (dot command sequences are imbedded within the text of the document). WYSIWIG systems are generally considered to be "state-of-the-art," and the presence or absence of this feature should be considered carefully when evaluating a desktop publishing product. If you are planning to do "serious" desktop publishing, you should probably buy a product that is WYSIWIG.

Desktop publishing is still a fairly new microcomputer application. During its short existence, however, two products have become what could be called

Continued on page 18.

Is Desktop Publishing Right for You?

Before you can answer this question, you should ask yourself a complex set of other questions with interrelated answers, according to Janet Holloway-Smith of Indiana University, Bloomington, Indiana. Some of these questions are:

- What purpose (and therefore, what look or style) do I intend for my documents?
- How much control do I want over the production process?
- Who will design my documents, and who will use the desktop publishing software?
- How do I go about selecting a desktop publishing package and begin learning it?

Analyze Your Audience and Purpose

The answer to the first will emerge when you analyze your documents. How long are they? What quality resolution do you seek, and what method of reproduction will give you that resolution: duplication, laser print, or photographic plates? Do your documents involve graphics, and if so, are they simple, like lines and boxes, or more complex, like illustrations or photographs?

Continued on page 17.

"DTP?" continued from page 16.

The hierarchy in quality of resolution looks like this. If you're preparing a document such as a letter, a proposal, or minutes of a meeting, word processed copy produced on a letter-quality printer will likely suit your purpose. If your project is a batch of flyers announcing a lecture on campus, you'll find graphics packages that offer a broad selection of type faces and fonts, and allows you to electronically "lay out" the text on the page. Are you producing a newsletter? Desktop-publishing packages grant flexibility with text and graphics, and the laser-print output (required whenever graphics are involved) at 300 dots per inch, is a step up from letter-quality print. If you're composing a mailing whose purpose is fundraising among alumni, your purpose and audience may call for documents with a sleek and costly look. The 1250-dot-per-inch resolution of phototypeset copy will likely be required for a distinctly professional, high-quality look.

The Production Process

How much control over the production process do you need, and where do you get it? The nature of your documents will steer you toward the appropriate print and production technology. A scholarly journal, published quarterly, is a good candidate for phototypeset print: the editor "fixes" the copy long before the finished journal appears on your desk.

But if you're working on a monthly newsletter, your production cycle is relatively compressed. If timeliness is critical, you need the freedom to juggle last-minute changes and late-breaking news -- a freedom lost when you send copy out to be typeset. Desktop publishing puts you at the helm on issues of content and page design.

Who's Doing the Work?

Now for personnel. Who will design your document? And who will use the desktop publishing software? Will those at the controls have a strong background in wordprocessing and/or graphics, and in the principles of layout and pasteup? No matter how briefly you've had your ear to the rails, you're sure to have heard the litany of desktop publishing caveats. Among them: desktop publishing doesn't turn you into a graphic artist overnight. And: desktop publishing can put in your hands the tools to make a multitude of design mistakes.

If you're faced with coming up with a template for a repetitive publication like a newsletter, getting the advice of a professional graphic artist is an invaluable investment. Some consultation can divert you from time-consuming trial-and-error, and net you a template that's not only workable, but graceful and professional.

And who will be learning the software? Are they permanent members of your staff, or hourly staff with a relatively high turnover rate? If the latter, you may find it more practical to invest in a desktop publishing package that is easy to learn and use. A good formula to remember is that the more powerful packages grant more control over the design and production of the final product. Yet those are the packages that are less transparent, less user-friendly, and more challenging to learn.

A Place to Start

Once you're convinced that desktop publishing is in your future, gather all the information you can about various software packages. Our campus offers lots of resources for the explorer. Look at articles on the subject in magazines like *PC World*, *MacWorld* and *Publish!*. Above all, don't be an island unto yourself. Even the "experts" have been at this a relatively short time, and are generous with their knowledge.

This article was excerpted from "Desktop Publishing: An Introduction" which was received from the Article database of CCNEWS, the Electronic Forum for Campus Computing Newsletter Editors, a BITNET-based service of EDUCOM. The original article, by Janet Holloway-Smith, appeared in the March 1988 issue of BACSpace, the newsletter of the Indiana University Computing Center. §

AppleSEED Meeting Scheduled

AppleSEED is a users group created to give Macintosh users a forum to discuss common solutions and issues found on the campus and in the industrial sector. This information exchange is accomplished at quarterly seminars. This quarter's seminar, hosted by Texas Christian University, will be on October 24, 1989 at the TCU campus in Ft. Worth. The focus will be multimedia and the keynote speaker will be Thom Holmes from DataPro/McGraw Hill Information Services. If you are interested in attending, contact Philip Baczewski or Panu Sittiwong of Academic Computing Services (565-2324) for information on registration. §

"Choosing" continued from page 16.

"industry standards." These products are Aldus Corp.'s PageMaker and Xerox Ventura Publisher, both WYSIWIG systems. Any features noted lacking in either of these two products may be present by the time this article is published, due to the constantly changing nature of the microcomputer software industry.

Disclaimers aside, the following comparison and contrast of Ventura Publisher (Version 2.0) and PageMaker (Version 3.0) should be of some help to you in making your decision. Please note that, in an effort not to complicate things more than necessary, the version of PageMaker that is reviewed here is for use on an IBM PC.

Microcomputer Configuration

- Xerox Ventura Publisher will operate on an IBM PC, PC XT, PC AT, and compatibles. It requires a 20MB hard disk (at least), a 360K disk drive, 640K bytes of RAM, DOS 2.1 or later, and a graphics display adapter such as the Hercules or EGA cards. CGA cards are supported but not recommended due to the poor level of resolution that they provide. Ventura Publisher uses 1 to 3 megabytes of disk space, depending on the printer fonts installed. It is bundled with a run-time version of Digital Research's GEM which is transparent to the user, although it can be run from GEM desktop.
- Aldus Corp.'s PageMaker was originally written to run on an Apple Macintosh. It has been available for IBM PCs for about two years. PageMaker requires an

AT class machine with 640K bytes of RAM, a 20 MB hard disk (at least), a 360K disk drive, DOS 3.2 or later, and a graphics display adapter such as the Hercules or EGA cards. CGA cards are supported but not recommended due to the poor level of resolution that they provide.

PageMaker is bundled with a run-time version of Windows, however you can run it under a full version of Windows to take advantage of the task switching feature that would let you switch from PageMaker to Windows Paint or Draw and back again without quitting PageMaker.

As you head into the world of high-end DTP, no program will satisfy you unless you remember that software alone does not a desktop publishing system make. A fast 286 machine hooked to a font-stuffed HP LaserJet II may get you started with one of these programs, but to take complete advantage of all their power, you must consider acquiring a 386-based system and a PostScript printer. PC Magazine (December 27, 1988, p. 135)

Although technically not required, even the most casual use of either Ventura Publisher or PageMaker will require you to get a mouse or some sort of pointing device. Make sure the pointing device you choose was designed for use with your particular type of PC and is supported by your desktop publishing product.

Ventura Publisher and PageMaker both support a variety of full-page displays. You might want to consider the purchase of such a display if you are planning to spend the majority of your time doing desktop publishing. Make sure that you get a demonstration of the display using your desktop publishing product. Also ask to see what it looks like when you are not doing desktop publishing. The appearance of the screen in an

environment that does not support the monitor (such as your word processing package, your spreadsheet, etc.) is an important consideration for many people who do not do desktop publishing full-time.

Text Formatting Features

- Xerox Ventura Publisher takes a document-oriented approach to page layout. This makes it particularly good for producing lengthy publications. Ventura offers multiple views of the page, including a reduced view, which shows a mock-up of the entire page, a normal view (100 per-

cent), and an enlarged (200 percent) view. A facing-pages option, which allows you to see two consecutive pages in a publication at the same time, is also available.

A document produced with Ventura Publisher represents a composite of several files, including text,

graphics, and style sheets.

The Ventura document file does not actually hold text or graphics but rather holds pointers to the DOS files that hold the text or graphics and styles. This gives Ventura documents a dynamic nature. Their format can be changed instantaneously by calling in a new style sheet and their content can be immediately updated by editing the text files that compose it.

It is possible to create and edit text within Ventura, but extensive text editing should be done with a full featured word processing program. Ventura can format over 150 pages per chapter. A "multiple chapter" function allows you to assemble many chapters into a

very large publication. Ventura automatically rennumbers pages and recreates the index and table of contents to reflect the sequence of chapters in the publication, and the entire publication can be printed at one time.

People who need to produce a lot of tables will be interested in the new add-on product available for Ventura Publisher. It is called the Professional Extension and operates as a fully integrated product. According to PC Magazine (December 27, 1988, p. 133), the table edit mode of the Professional Extension "is Ventura's answer to on-screen forms design.

Other notable features of the Professional Extension include Expanded Memory Support (EMS) and a WYSIWYG equation generator. If you have 1.2 MB of available EMS, you can also load the 130,00-word Edco hyphenation dictionary that comes with the Professional Extension

- Aldus Corp.'s PageMaker takes a page-oriented approach to page layout. This is considered to be particularly good for applications such as short newsletters, brochures, advertisements, and other publications that require high quality graphics and have pages of differing formats. Multiple document views are available, including a full-page reduced view, 50 and 75 percent, actual size, and 200 percent enlargement.

An internal text editor is available, although extensive editing should be done with a full featured wordprocessing program. PageMaker can theoretically accommodate a document up to 128 pages long. This would be impractical, however, due to the page-by-page orientation of the program. It can often take several seconds to redraw the screen after editing an image or turning the page.

Document Formats Supported

- Xerox Ventura Publisher will import text from WordStar, Microsoft Word, MultiMate, WordPerfect, XyWrite, and Xerox Writer. Standard text files in ASCII and DCA format are also supported.
- Aldus Corp.'s PageMaker will accept text files produced with WordStar, Microsoft Word, MultiMate, WordPerfect, XyWrite III Plus, Samna Word, and Windows Write. Standard text files in ASCII or DCA format are also supported.

Graphics

- Xerox Ventura Publisher will import Line art from GEM Paint and Draw program, Lotus 1-2-3, PC Paintbrush, AutoCAD, Mentor Graphics, and Video Show. It also supports numerous standard graphics formats including Hewlett-Packard Graphics Language, GSS's Computer Graphics Metafile, Macintosh Paint and PICT formats, and encapsulated PostScript (EPS). Ventura Publisher will incorporate images scanned with Microtek, Dest, Datacopy, Hewlett-Packard, Advanced Vision Research, and compatible scanners into Ventura Publisher documents. It DOES NOT support the TIFF format, discussed below.

Graphics functions within Ventura Publisher allow you to create lines, boxes, shades and circles. Once you have placed a graphic in a frame within your document, you can crop, scale, or pan it.

- Aldus Corp.'s PageMaker can import graphic images from AutoCAD, Windows Paint and Draw, Lotus 1-2-3, Symphony, PC Paintbrush, PC Paint, and In a Vision. It also supports scanned images stored in EPS or TIFF (Tag Image File) format. This last

feature gives PageMaker the ability to incorporate professional-quality black-and-white photographs and, given a high-resolution output device, produce photos that are of equal quality to those seen in major news magazines.

Graphic functions available within PageMaker include tools for drawing lines, rectangles, circles and ellipses. A wide variety of rule weights, borders and fill patterns are available and you can choose from among three types of double rules, one triple rule, five types of broken rules, eight different thicknesses of single rules, and a reverse (white on black - if your printer supports it) rule. You can also specify the degree of roundness of the corners in rounded rectangles.

Once your graphics images are placed on a page they cannot be edited. They can be cropped and scaled, however. Both proportional scaling and anamorphic (distorted) scaling are supported.

Printers

- Xerox Ventura Publisher supports PostScript, Interpress, Hewlett-Packard LaserJet Plus, Xerox 4045, and Cordata laser printers. Laser printers that use the J Laser card and the Xerox 4020 color ink-jet printer are also supported. Some dot-matrix printers are supported but are not recommended due to their lack of speed and mediocre resolution. Almost any font and point size available on the selected output device can be used with Ventura Publisher, and you don't have to reformat a document if you decide to change output devices.
- Aldus Corp.'s PageMaker supports any output device that runs under Microsoft Windows (PageMaker's operating environment). These devices include Hewlett-Packard's LaserJet, the Apple LaserWriter, and many

others. Also supported are several popular color printers including the QMS ColorScript. A PageMaker document is tied to the printer when the document is created. If you change your target printer you have to reformat your document.

Cost

- Xerox Ventura Publisher Version 2.0 has a list price of \$895. The Professional Extension lists at an additional \$595.
- Aldus Corp.'s PageMaker Version 3.0 has a list price of \$795.

Both products can be purchased for substantially less from mail order catalogues or discount software establishments such as Soft Warehouse.

Which One Is For You?

When the original version of this article was written, Ventura Publisher seemed to be the best choice for PC users. Since that time, however, both PageMaker and Ventura Publisher have come out with powerful new versions. They are moving closer to each other in terms of their capabilities, but there are still some notable differences. Here is what the *PC Magazine* Editor's Choice box says (December 27, 1988 p. 135):

Though you would probably love to know once and for all which desktop publishing program is better, PageMaker or Ventura Publisher, the answer is still totally dependent on your desktop publishing needs. PageMaker, Version 3.0, has edged closer to the long-document-processing capabilities that until now have been Ventura's main advantage. At the same time, Ventura, Version 2.0, has edged closer to the intricate design and layout power of PageMaker.

Nevertheless, this evolution has not yet made the programs indistinguishable from one another, and

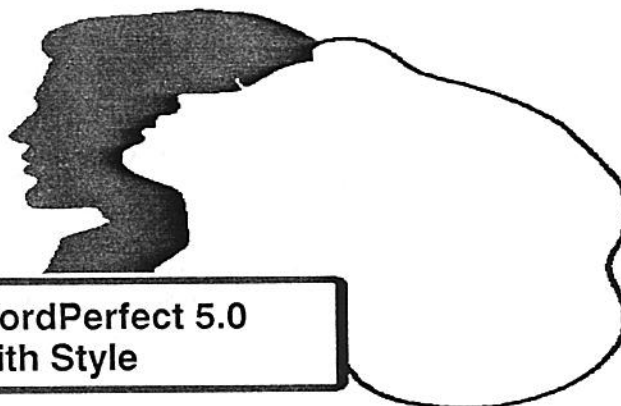
each retains dominance in its realm. For a four-page newsletter, use PageMaker. For a 300-page technical document, use Ventura. With its excellent \$595 Professional Extension in tow, Ventura is also aiming to capture a corner of the turf currently targeted by the immensely powerful IBM Interleaf Publisher.

Further Assistance

A variety of organizations have emerged in the recent past that will be glad to assist you in the process of choosing a desktop publishing system. One of these is EPOCENTER at INFOMART in Dallas. It is billed by INFOMART as a "first-of-its-kind business resource that brings all the elements of electronic publishing together under one roof." The services that EPOCENTER provides are free. For more information call 214-746-INFO or 800-367-7100.

References

- Beinhorn, George, "Advanced Word Processors -- Familiar Faces, New Features," *PC World*, July 1989, pp. 97-106.
- Burns, Diane and S. Venit, "Muscling In on the MAC: PC-Based PageComposition," *PC Magazine*, February 10, 1987, pp. 119-156.
- Cavuoto, James, "Three PC-based Desktop-Publishing Programs," *BYTE*, December 1987, pp. 169-176.
- Gibson, Mary Margaret, "Ventura vs. PageMaker," *Texas Computing*, May, 1987, pp. 22-25.
- Hannotte, Dean, "WordPerfect on the Move," *PC Magazine*, November 29, 1988, pp. 117-134.
- Simone, Luisa, "Power Publishing," *PC Magazine*, December 27, 1988, pp. 89-135.
- Sorensen, Karen, "PC Page Layout Program Uses Gem," *Infoworld*, March 3, 1986, p. 5.
- Wood, Lamont, "Word Processors for Desktop Publishing," *BYTE*, May 1988, pp. 102-116.



Using WordPerfect 5.0 With Style

By Kevin Mullet, Academic Computing Consultant (KEV@UNTVAX)

This is a reprint of an article that appeared in the August/September 1988 issue of Benchmarks, page 15.

The Dilemma

Writing with a word processor is both a blessing and a curse. If you did all your writing with a unadorned typewriter, you would never feel the need

to use extravagant text formatting. Your most elaborate formatting would consist of centering your text by counting out spaces with the backspace key, or underlining it by adding underscores. Many of us, however, use word processors and have come to expect a more sophisticated level of formatting in the text we read and write.

Typically, a respectable word processing program will allow you to write in **boldface** or underlined type. Many will also allow you to have a far greater measure of control over your formatting. With this greater measure of control, however, comes increased program sophistication and difficulty. Clearly, this added difficulty calls for a method of using a variety of different formatting styles without giving up the program's ease of use.

The Solution

Style sheets are one solution to this challenge. With a style sheet, you can keep a list of all your different formatting requirements and use them in your document without having to remember a lot of arcane program commands. In a style sheet, you can refer to each of your formatting requirements with a natural language name, rather than a cryptic control code or function key sequence.

The traditional method of specifying format requirements is one-at-a-time through function-key sequences in WordPerfect 5.0. You may also create a list of formatting styles called a style sheet. Style sheets enable you to easily change back and forth between any number of different styles by selecting a custom format from a menu.

Thinking About Your Style Sheet

Setting up your style sheet is initially more difficult than imbedding codes directly in your documents. Using a personalized style sheet, however, is much easier than embedding print

and formatting codes each time you change formats. You may find, therefore, that using style sheets is well worth the effort it takes to create them.

Ideally, your style sheet should change dynamically as your writing, and hence the demands you make on your word processor, change. Your initial style sheet should include descriptions of all the different format styles you commonly use.

Do the first step in defining your style sheet without a computer. Take a moment to think about all the different types of documents you write in WordPerfect. Then, make a list of all the different formatting styles you use. One might be the style you use for headings in memos: Bold with a specific tab setting, aligned on colons. Another style might be the settings used when citing a long passage from another work.

With style sheets, you can make complete changes from one format to another with ease and uniformity, without having to memorize long chains of cryptic commands.

Once you've decided on what styles you want to include in your style sheet, the first step is to make sure that WordPerfect knows where to store your style sheet information. (Remember: this discussion applies only to WordPerfect 5.0, not to WordPerfect 4.2.) To define where your style sheet is to be stored, give the SETUP command (<Shift><F1>) and select 7-Location of Auxiliary Files. From that menu, select 6-Style Library Filename. Now, enter a valid file name that WordPerfect can use to store your style sheet, preceded with a valid path. If you're not sure what a path is, check your DOS manual. WordPerfect now knows where to store your style definitions. The next step is to add the various definitions to your style sheet.

Two Kinds of Styles

There are two types of styles in WordPerfect style sheets: **open** and **paired**.

Open styles are definitions of formats that you want to use from one point in the document until the end. An example of a good candidate for an open style would be the format required for thesis or dissertations. You could place all the margin and type requirements in one style definition, call it "Style for my thesis" and use it at the beginning of any document you include in your thesis. Likewise, you could store all the exceptional requirements for a bibliography or resume in a single open style call it up whenever it was needed.

Paired styles are typically used from one place within a document to another. An example of this would be the style used when citing from another work, where the requirement is often to italicize the text and indent it an additional inch on each side. Another example of a good paired style definition would be tables. Typically, when tables are included in a document, they are centered on the page and in bold print. With a paired style definition, you could enter a table in the middle of a document, define it as a block, then apply the style to the table.

Creating Your Style Sheet

The actual process of adding style definitions to your style sheet is straightforward and simple. Here's the steps for adding a style to your style sheet:

- A. Call up the style sheet screen by pressing <ALT><F8>
- B. Create a new style by choosing 3 Create from the styles menu. A new menu will appear on the screen: Styles: Edit. From here, you will define your style requirements. There are five things WordPerfect needs to know for each style. To specify each of these items, simply press the item's number and enter the information as requested.

1. Name - This is a short name by which WordPerfect can internally refer to the style. It's usually best to make this an

abbreviation of the longer name.

2. Type - This is either paired or open, as described above.

3. Description - This is a one line description that is listed on the STYLE screen. Use this to describe the style distinctly enough so you'll know which style this is.

4. Codes - When you select this item, you will go to a reveal codes screen. From here, specify all the various codes and formatting requirements such as typefaces, margins, etc... that you will require of this particular style. If you press HELP (<F3>) while in this screen, you'll access a large amount of information on the WordPerfect commands that affect formatting. If you are defining a paired style, then you'll see a comment box on the screen. Place all formatting codes to begin using a particular style before the comment. Place all formatting codes to end a given style after the comment.

When you're through specifying all the codes for a given style, give the exit command (<F7>).

5. Enter - This selection gives you control over what your <ENTER> (or <RETURN>) key does while using a paired style. For more information, see p. 256 in your WordPerfect 5.0 documentation.

C. Save your style sheet to the hard disk - Once you've defined a style, update your work on your hard disk by pressing 6 and typing the path and name of your style sheet. If you save your style sheet, you will be able to use it in another document. At this point, you can define any additional styles you want to include in your style sheet, or edit existing ones.

D. Exit back to your document screen - Now that you've defined your style sheet, you can press

Exit, (<F7>), and return to your document screen.

Using Your Style Sheet

You now have a personalized style sheet that you can use to format your documents. Using a style sheet is a simple affair, but there are slight differences between using a paired style and an open one. You can use both styles before or after typing your text. It's simply a matter of personal preference.

Using Open Styles

An open style is one that you will want to use throughout an entire document, or a large portion thereof. Specifically, an open style is one that starts and never finishes (or at least not until the end of the document). To use an open style, place the cursor at the point in your document where you would like to start using the open style. Call up your style sheet by giving the style command, <ALT><F8>. Your screen will now show your style sheet (or at least the first screenful of it) with each style on a separate line. Move the highlighted bar down with your cursor keys to the open style that you want to use and press <RETURN>. You have now placed a hidden instruction in your document, and any text located after this location will use this style.

You may also make temporary changes in the style of certain passages of your text using paired styles.

Using Paired Styles

A paired style is one that will define how a specific portion of text in your document will look. The way to use this style differs slightly depending on whether or not you have already typed your text.

If you have already typed your text into your document, define the text you want to format in a paired style as a block. Blocks are a device used in word processors to make it easier

to deal with a selection of text from a larger document. In WordPerfect, a block is defined by moving the cursor to one end of the desired passage, pressing **block**, or <F4>, then moving the cursor to the other end of the passage.

Once you've defined the selection as a block, press **style**, or <ALT><F8>. Select the paired style you want from the menu by moving the highlight bar to it and pressing <RETURN>.

If you prefer to select the style you want then type the text, simply bring up your style sheet, select the paired style you want, and press <RETURN>. Anything you type from now on is formatted in this style until you use the cursor keys to move past the [Style Off:stylename] code inserted in your document.

So there you have it. WordPerfect 5.0 style sheets in a, admittedly, rather large nutshell. As you can tell, although style sheets will save you a great deal of time, defining them isn't a project to jump into with only five minutes to spare. Ideally, you should have your entire style sheet defined in your mind before you even start to define it in WordPerfect. This isn't to say that you should define it once and never change it, but rather to suggest that the more you reflect on the contents of your style sheet the more useful it will be to you. Then again, writing, itself, is like that. §

WordPerfect User's Group Forming

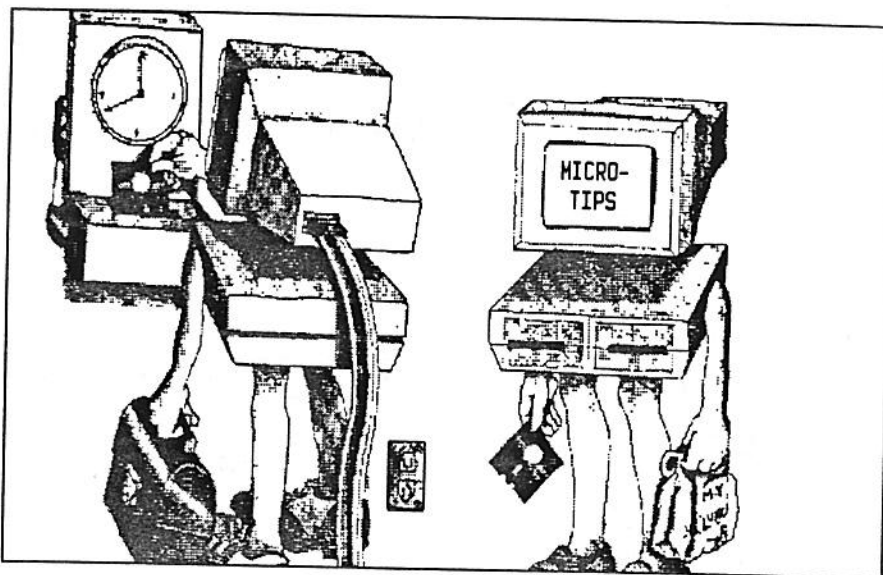
Sandy Franklin, Office Automation Specialist in Academic Computing Services, would like to start a campus WordPerfect User's Group. Faculty, staff, and students would be eligible to attend. Please notify Sandy, in writing, if you are interested. If there is enough interest, a monthly meeting - probably during the noon hour - will be scheduled. §

WordPerfect 5.1 Upgrade Highlights

By Claudia Lynch, *Benchmarks* Editor
(BITNET: AS04@UNTV.M1)

WordPerfect 5.1 is in beta test now, with release scheduled for sometime between November 1989 and February 1990. According to *PC Week* (September 18, 1989, page 1), early users are giving high marks to the package for tables creation and complex equation performance features. A "sneak preview" of the product in the October 1989 issue of *WP Corp Report*, produced by WordPerfect Corporation, lists the following new features and enhancements:

- **Tables** - Gives you the ability to create organized rows and columns of tabular data automatically enclosed in graphic lines.
- **Labels** - Mailing label formats are easily defined.
- **Merge** - A merge language has been created that resembles the macro language in 5.0 and merge codes have been modified so that they are easier to understand.
- **Equations** - An equation editor has been which includes a complete collection of symbols, characters and mathematical operators and functions.
- **WordPerfect Character Set** - It is now possible to print the entire WordPerfect character set on any of WPCorp's supported printers. Characters or symbols not present in the printer, it will be printed as a graphic by WordPerfect.
- **Pull-Down Menus and Mice** - Pull-down menus have been created and can be accessed with a single key. It is now possible to use mouse to access all the functions of WordPerfect.
- **Context-Sensitive Help** - You can press Help and get Help messages corresponding to the feature you are using at that time. §



This column is intended to serve as a forum for sharing useful tips on making more productive use of microcomputers. If you have a tip that you feel may be of use to campus users, submit it to the Benchmarks editor for possible inclusion in a future issue.

Going Beyond the Processing of Words

By Sandy Franklin, Office Automation Specialist

Awonderful thing is happening on our campus. Documents are starting to circulate that really look sharp. They have not been produced professionally by a typesetter and print shop - they are being produced in offices with desktop publishing packages all over campus. These documents have the same verbal content as they used to have, but they have been doctored with graphics, graphic lines, boxes, and different sizes and types of fonts.

With the help of products such as WordPerfect 5.0, Ventura Publisher, Microsoft Word, and Aldus PageMaker, traditional word processing will never be the same. These products are changing the way information is organized, generated and presented. Because this is a new area for most of those doing the creation of the documents, here are some reminders about good design techniques:

- Don't let your design overwhelm your message. A good design enhances the material without distracting the reader's attention.
- Don't mix too many typestyles. Find two that go well together and stick with them.
- Don't use too many special effects fonts such as outline, shadow, or gray text.
- Don't set long blocks of text in all caps or italics.
- Don't overdesign. You are trying to avoid creating a document that looks cluttered and confusing.
- Don't let paragraphs get too long. Short paragraphs are not only more attractive, they make reading faster and easier.
- Don't crowd the page.

Several books are on the market to help new desktop publishers. A couple are written by Roger C. Parker, *Looking Good in Print: A Guide to Basic Design for Desktop Publishing* (Ventana Press), and *Desktop Publishing With WordPerfect* (Ventana Press). It is time consuming to experiment with different designs, graphic lines, headers, footers, and graphics, but will be worth the effort when you start receiving well-earned accolades for your efforts. §

VAX COMPUTER CLUSTER

Are Your MAIL Message Lines Too Long?

By Jerry Stearns, Academic Computing Services, University of Minnesota, Twin Cities (BITNET: JSTERN@UMNACVX)

Reprinted, with minor changes, from the University of Minnesota, Twin Cities ACS Newsletter (September 1989, p. 199)

Many people have received an error message like the following when they try to send a message via VMS Mail:

```
%MAIL, error reading SYSSINPUT
-RMS, 277 byte record too large for user's
buffer
%MAIL, no message sent
```

This error message is precise, but it is not clear about the cause of the problem. This article will explain the problem and suggest a solution.

The Problem

Many people are accustomed to using a word processor, like MS-Word or WordPerfect, on a microcomputer. Most word processors automatically "wrap" a line of text from the extreme right margin of the screen onto the next line. When inserting text into mail messages or files, many microcomputers used as terminals connected to the VAX computer use a similar "wrap" function, which is provided by either the communications software (like ProComm), or by executing the VMS

Continued on page 25.

BEST OF THE BBS

Edited by Billy Barron,
VAX System Manager
(BITNET: BILLY@UNT VAX)



Welcome to the **Best of the BBS** column. This column highlights some of the more interesting and useful discussions on the UNT BBS. From those of you not familiar with the BBS, here is how to log into the UNT BBS.

- Sign-on by typing CALL DEC at the LAN prompt and then entering BBS as your Username at the VAX prompt.
- If you are already logged-on to the VAXcluster, type BBS at the \$ prompt.

The opinions expressed in this column do not necessarily reflect the views of Academic Computing Services or the Computing Center. Also, information in **Best of the BBS** has not been checked for accuracy.

New strain of nVIR Mac Virus

#16506 9-AUG-1989 01:17:23.35

Subject : New Mac Virus, clone of nVIR

According to comp.virus [a USENET newsgroup] in the past two days, there is a new Mac virus (can't remember name) that is basically a clone of nVIR B (and its other clones, hpat & aids). There is a new disinfectant out (1.2?) that cures the problem. I suggest sumex-aim.stanford.edu [via anonymous FTP] or rice.bitnet for getting the program.

Getting Out of the Library Computer

#20621 31-AUG-1989 22:07:39.21

Subject : LIBRARY

Can anyone tell me how to get back to the # sign after getting in to the UNT catalog search? I have been hanging up to get off.

.....
#20639 REPLY TO #20621 31-AUG-1989 22:34:42.69

Subject: REL LIBRARY

Either type ESCape DElete or ESCape RETurn to get the # prompt back. Then type DONE and hit return twice.\$

SET TERMINAL command, which defaults to the /WRAP qualifier. Often *both* of these functions are turned on. Either of these functions will display a carriage return and line feed after 80 characters are entered on the text line. That is, although your file will *appear* to contain only lines of 80 characters or less, it in fact contains fewer lines, some of them containing many more than 80 characters.

The problem arises because, although the "wrap" shows up on the screen, the input memory buffer in the Mail software does not recognize it. Mail just recognizes a single text line written out to 255 characters, which is the limit for the width of the input buffer. The operating system then displays the error message listed above and aborts the Mail message.

Another result of this same width limit occurs when you enter a <RETURN> sometime after the eightieth character but before you reach MAIL's limit of 255 characters. Your screen will show, say, two-and-a-half lines of perfectly readable text. And Mail will accept such a message. You can then send the message via BITNET, and if you have a copy sent to yourself for your records and read the copy, Mail will automatically wrap it on the screen, so it looks all right to you. BITNET, however, cannot transmit lines longer than 80 characters. So it will chop off all text beyond the eightieth column. When the message arrives at its destination, many lines have been truncated, leaving behind both the text and the meaning.

The Solution

The solution, fortunately, is quite simple: When you are typing a message that you intend to send over electronic mail, include a <RETURN> at the right margin of every line. Do not rely on the automatic wrap function of a terminal or personal computer being used as a terminal. It will help you to remember this if you would turn off the wrap

function. On the VAX, use the SET TERMINAL/NOWRAP command. Also make sure it is off in the communications software you're using. ProComm includes it under "Terminal Setup," and the default position is Off.

You can also type in text in Mail using the default EDT editor. When starting the Mail program, use the MAIL/EDIT command. When already in Mail, add the /EDIT qualifier to the commands SEND, REPLY, or FORWARD. (The EDT screen editor does contain its own wrap function, but its default setting

is off.) When you type in a line longer than 80 characters in EDT screen mode, EDT shows a diamond at the extreme right, indicating that there is more text beyond the 80 characters currently visible on the line. It is easy to break the line before 80 characters by simply placing the cursor in front of the diamond and pressing <RETURN>.

If you prefer to use another editor, use the SET EDITOR command within MAIL to define it.

Remember, inserting a <RETURN> at the end of each line avoids getting an error message in return when you try to mail the message. §

VAXCLUSTER USAGE STATISTICS

August Top Ten Programs: Frequency of Runs

Program	Description	Number of Runs	Percent of Total
1. LOGINOUT	User login	116755	28.7
2. SET	VMS Utility	56842	14.0
3. DELETE	VMS Utility	30272	7.4
4. User programs	Compiled Programs	29822	7.3
5. DIRECTORY	VMS Utility	26594	6.5
6. TYPE	VMS Utility	17921	4.4
7. SHOW	VMS Utility	15779	3.9
8. NETSERVER	DECnet Server	13887	3.4
9. SEND	BITNET Message Utility	9127	2.2
10. SYSLOGIN	User login	8911	2.2
Total		406585	

August Top Ten Programs: CPU Time Used

Program	Description	CPU Time	Percent of Total
1. User programs	Compiled Programs	33 09:06:02.44	75.9
2. NEWS	ANU News Utility	3 17:13:05.23	8.4
3. BBS	Bulletin Board	0 18:48:53.49	1.8
4. LOGINOUT	User login	0 16:53:18.13	1.6
5. BACKUP	Disk Backups	0 14:11:15.39	1.3
6. EDT	Editor	0 09:40:16.33	0.9
7. MAIL	VMS Mail	0 07:48:02.48	0.7
8. PASCAL	PASCAL Compiler	0 07:21:49.64	0.7
9. TPU	TPU Editor	0 06:15:07.80	0.6
10. PACSPROCESS	Accounting Utility	0 06:00:06.13	0.6
Total		43 14:03:28.78	

COMPUTING TECHNICAL SERVICES

Mainframe Performance Statistics

NAS/8083 Dual Processor Performance Statistics for August

CPU	SYSTEM	Scheduled Operating Hours	Planned Maintenance Hours	Planned Production Hours	Unplanned Maintenance Hours	Production Hours Achieved	System Uptime
ACAD	VM/SP5	744	0.00	744.00	11.84	732.16	98.4%
ACAD	MUSIC/SP	744	40.41	703.59	13.64	689.95	98.1%
ACAD	MVS/JES2	744	0.00	744.00	16.92	727.08	97.7%
ACAD	COMPLETA	744	0.00	744.00	24.12	719.88	96.8%
ADMN	MVS/JES2	744	0.00	744.00	2.22	741.78	99.7%
ADMN	COMPLETA	356	0.00	356.00	5.33	350.67	98.5%
ADMN	ADABASA	744	18.19	725.81	21.22	704.59	97.1%

System Uptime = (Production Hours Achieved) / (Planned Production Hours)

Production Hours Achieved = (Planned Production) - (Unplanned Maintenance)

Scheduled Operating Hours = (Planned Maintenance) + (Planned Production)

MUSIC/SP Planned Maintenance Hours include 20.28 hours for system backup and 20.13 hours for VM/SP3 system backup.

ADABASA'S Planned Maintenance Hours include 18.19 hours for system backup.

The ACAD CPU achieved 100% uptime; the NAS/7360 DASD achieved 100% uptime; the NAS/7380 DASD achieved 100% uptime. The ADMN CPU achieved 100% uptime; the NAS/7360 DASD achieved 100% uptime; the NAS/7380 DASD achieved 100% uptime.

Lost productivity is calculated as the greatest amount of elapsed time that any

one of the production systems was unavailable for scheduled operation. Lost

productivity hours were contributed to by the key causes appearing in the table below.

ACAD CPU:

Miscellaneous

1. Systems development.	13.36 HOURS
2. COMPLETA system maintenance.	7.96
3. COMPLETA system failure.	4.08
4. Operator error in restarting VM/SP.	3.35
5. VM/SP restart failures.	2.71
TOTAL	31.46 HOURS
GRAND TOTAL	31.46 HOURS

ADMN CPU:

Miscellaneous

1. ADABASA file maintenance.	17.62 HOURS
2. Systems development.	3.22
3. Keeping COMPLETA down to run FISCAL jobs.	2.22
4. COMPLETA system failures.	1.75
TOTAL	25.41 HOURS
GRAND TOTAL	25.41 HOURS

Disk Backup Schedules

Administrative MVS/SP System

Backups of the system and certain administrative data packs consist of daily incremental dumps, weekly full pack dumps, and monthly full pack historical dumps. The packs backed up are:

SYSRES, SYSCAT, SYSLIB, SYSVOL, ADM001, ADM002, ADM003, ADM004, ADM006, ADM007, ADM008, ADM009, ADM00A, ADM00C, ADM801, ADM802, ADM803, ADM804, ADM810, ADM811, ADM812, ADM813, ADM814, ADM815, ADM816, ADM820, ADM821.

Other volumes are backed up on an as-needed basis.

Daily Backups

Daily backups are taken Monday through Friday around 7:00 p.m. (after COMPLETE is shut down) and on Saturday and Sunday if COM-LETE has been up that day. The backup tapes are retained for 8 days. This is sufficient to insure that all are kept through the next weekly backup.

Weekly Backups

Weekly backups are full pack dumps taken on Sunday morning of each week. These backup tapes are retained for 35 days. This results in 5 generations being available, which is sufficient to span monthly backups.

Monthly Backups

Monthly backups are full pack dumps taken on the first day of each month. These backup tapes are retained 185 days for systems volumes and 397 days for administrative volumes. The most recent monthly backup tape is stored in an off-site vault and all others in the tape library until they expire.

Academic MVS/SP System

Backups consists of daily incremental dumps, weekly full volume dumps, and monthly full volume historical dumps. The volumes backed up are:

SYSRES, SYSCAT, SYSLIB, SYSDLB, SYS15C, SYSTSA, SPOOL1, ACAD00, ACAD01, ACAD02, and ACAD03.

Daily Backups

Daily backups are incremental dumps. These dumps are taken Monday through Sunday during the early hours of the morning. These backup tapes are retained for 7 days. This is sufficient to insure that all are kept through the next weekly backup.

Weekly Backups

Weekly backups are full pack dumps taken on Sunday of each week. These backup tapes are retained for 35 days. This results in 5 generations being available, which is sufficient to span monthly backups.

Monthly Backups

Monthly backups are full volume dumps taken on the first day of each month. These backup tapes are retained for 185 days. The most recent monthly backup tape is stored in an off-site vault and all others in the tape library until they expire.

MUSIC/SP System

Daily Backups

MUSIC Daily backups include an incremental Save Library backup, UDS (User Data Set) backup, and an ID Code dump. MUSIC daily backups are performed 6 days per week, Wednesday through Monday, starting at 4:00 a.m., for about 30 minutes.

Weekly backups

MUSIC weekly backups include a full Save Library backup, UDS backup, and an ID Code dump. Weekly backups are performed at around 3:00 a.m. Tuesday mornings (for about 2 hours). Six sets of tapes are maintained.

Permanent Semester Save Library Backup

Once a semester, a permanent backup is taken. This includes a full Save Library backup, UDS backup, and an ID Code dump. These backup tapes will be maintained on a continuing basis at the discretion of the Director of Academic Computing Services.

VM/SP System

VM Weekly

A weekly backup is taken of volumes VM3RES, VMCMS1, VMCMS2, MUSICX, MUSICY, and MUSIC1. Six sets of tapes are maintained. VM weekly backup is performed early on Wednesday mornings.

CMS mini-disks

The CMS backup consists of dumps of all mini-disks for all users. Both a weekly (complete) and daily (incremental) backup are performed by the BACKUP/CMS system. The weekly backup is performed on Wednesdays starting at 3:00 a.m.; the daily backup is performed every other day of the week, at an operator-scheduled time early in the morning.

Weekly backup tapes are retained for 6 weeks; daily backup tapes are retained for 2 weeks. The backup tapes are managed by the TAPELIB/CMS system.

VAX Backup Schedule

Incremental backups of the VAXcluster are performed Monday through Thursday at 6 p.m. Users do not have to log-off, but any files that are open at the time of the backup will NOT be backed up.

Full backups of both systems are done every Friday beginning at 8 a.m.. These generally will take all day to complete. Again, users do not have to log-off, but any files that are open will not be backed up.

A "Stand Alone" backup of the system disk is done once a month. This procedure makes a copy of the system disk that can be used to restore its contents if the disk is completely destroyed. The system will be shutdown for this. Watch the system log-on message for specific times and dates.

NOTE: Requests for restoration of files should be made via MAIL to the username OPERATOR. Your file can only be restored if it existed before the last backup was done. §

ACADemic (NAS) Program Hit Parade

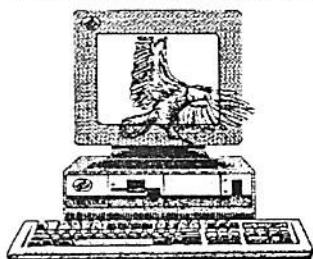
August Top Ten Programs : Frequency Of Runs

Program	Description	Number of Runs	Percent of Total
1. PGM=*.DD	Compiled Program	8601	20.0
2. IEWL	Linkage Editor	8294	19.3
3. IEV90	Assembler H	4293	10.0
4. IKFCBL00	VS COBOL Compiler	4245	9.9
5. IDCAMS	VSAM Utility	4078	9.5
6. IEBGENER	IBM Utility	2974	6.9
7. SASLPA	SAS	2745	6.4
8. SPSSX	SPSS-X	1532	3.6
9. PTPCH	Dataset Lister	858	2.0
10. SCRIPT	Waterloo/SCRIPT	782	1.8

August Top Ten Programs: CPU Seconds Used

Program	Description	CPU Seconds	Percent of Total
1. SASLPA	SAS	165793	75.0
2. COMPLET4	Academic COM-LETE	15853	7.2
3. SPSSX	SPSS-X	7262	3.3
4. FATS	Tape Verification Program	4705	2.1
5. SCRIPT	Waterloo/SCRIPT	3852	1.7
6. IKFCBL00	VS COBOL Compiler	3637	1.6
7. PGM=*.DD	Compiled Program	3352	1.5
8. IEV90	Assembler H	2988	1.4
9. ISTINM01	VTAM Utility	2004	0.9
10. ADARUN	ADABAS Utility Module	1768	0.8

The programs listed in this section were used the most frequently on the NAS CPU during the month of August, 1989. Please Note that ACAD is the official designation of the part of the NAS/8083 CPU that is dedicated to faculty and student use. The portion of the computer reserved for University administrative purposes is termed ADMN.§



University of North Texas Computing Center

Richard A. Harris, Associate Vice President for Computing
 Steve Minnis, Director of Computing Technical Services
 Dave Molta, Director of Academic Computing
 Coy Hoggard, Director of Administrative Computing
 Claudia Lynch, *Benchmarks* Editor
 Philip Baczewski, *Benchmarks* Associate Editor

Get a Subscription to *Benchmarks*

Benchmarks is a vital link between the UNT Computing Center and the users of our facilities. It is important for all users of the computing facilities to maintain a file of these newsletters because they contain materials which will periodically update existing documents as well as information and suggestions on uses of OS/MVS, MUSIC/SP, the VAXcluster, Microcomputers, and other resources available to UNT students and faculty. To facilitate the dispersal of *Benchmarks*, *** FREE *** subscriptions are available. To receive yours, send the following information to us either by snail mail (the post office or campus mail), FAX (817) 565-4060, or through electronic mail, to the UserID AS04 on MUSIC, VMS, or CMS.

Name: _____

Mailing Address: _____

PLEASE GIVE A CAMPUS ADDRESS (NOT BOX) IF POSSIBLE! - It's Cheaper !!

☐ Renewal ☐ Change of Address ☐ Cancel Subscription

*Academic Computing Services
University of North Texas Computing Center*



Academic Computing Services

The Computing Center

NT Box 13495

University of North Texas

Denton, TX 76203

FAX 817-565-4060

Computing Center Short Course Registration Form

Please complete this form and return it AS SOON AS POSSIBLE if you wish to attend any of the short courses listed below. You may also register over the phone by calling (817) 565-2324. **FACULTY AND STUDENTS HAVE FIRST PRIORITY TO REGISTER FOR THESE CLASSES. STAFF MEMBERS ** MUST ** REGISTER THROUGH THE PERSONNEL OFFICE.**

NAME: _____ FACULTY ____ STAFF ____ STUDENT ____

DEPT: _____ UNDERGRADUATE ____ GRADUATE ____

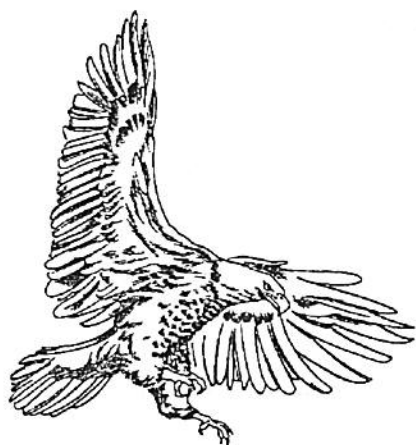
PHONE: _____ MAILING ADDRESS: _____

I wish to attend:

- **Introduction to JCL (ISB 123):**
____ Tuesday, November 14: 9-11 a.m.
- **Introduction to SPSS-X (ISB 110):**
____ Tuesday, November 14: 3 - 5 p.m.
- **Introduction to Micros (ISB 110)**
____ Wednesday, November 8: 9-11 a.m.
- **Using Microcomputers In a Networked Environment (ISB 110)**
____ Wednesday, November 15: 3-5 p.m.
- **Introduction to Wordprocessing on the PC (ISB 110)**
____ Friday, November 17: 1-3 p.m.
- **Introduction to PCWS (ISB 123):**
____ Tuesday, November 14: 3-4 p.m.
- **Introduction to SAS (ISB 110):**
____ Wednesday, November 15: 9-11 a.m.
- **Introduction to CMS (ISB 123):**
____ Thursday, November 16: 3-5 p.m.
- **Introduction to MS/DOS (ISB 110)**
____ Wednesday, November 8: 1-3 p.m.
- **Introduction to Wordprocessing on the MAC (ISB 110)**
____ Friday, November 17: 3-5 p.m.
- **Introduction to PROCOMM (ISB 123):**
____ Tuesday, November 14: 2-3 p.m.
- **Introduction to BITNET (ISB 123)**
____ Monday, November 20: 3-5 p.m.

I would like to see more classes offered: ____ on weekends; ____ at night.

The classes I am interested in are: _____



**Academic Computing Services
The Computing Center
NT Box 13495
University of North Texas
Denton, TX 76203
FAX 817-565-4060**
